ONLINE BULLETIN BOARD SYSTEMS: AN EFFECTIVE RESOURCE FOR GEROPSYCHIATRIC NURSES WORKING IN LONG-TERM CARE?

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ABSTRACT

As Canada's population ages and the healthcare system undergoes reform, increasing demand is placed on registered nurses working in long-term care (LTC) to provide care to seniors with complicated cognitive and behavioural needs. Although the field of geriatric nursing has expanded with the growth of the senior's population, few nurses feel that they have sufficient information and support to provide adequate care to this population. The goal of this study is to determine whether an Online Bulletin Board System (BBS) is an effective means of meeting nurses' needs for information, networking and support. Meeting these needs is also expected to result in increased perceived levels of care provision efficacy and job satisfaction.

A multi-phase sampling frame was used to recruit participants nationwide. In total, the sample was comprised of 42 participants (17 control group participants and 25 intervention group participants). The intervention consisted of providing nurses with access to an Online BBS over a four-and-a-half month period. The Online BBS was designed to allow nurses to share geropsychiatric based information and network with each other in a supportive environment. Data was collected through a pretest and posttest questionnaire, as well as from postings and responses made to the Online BBS. Repeated measures analyses was used to test the effectiveness of the Online BBS on four dependent variables.

Results suggest that the Online BBS had a positive effect on reducing the frequency of information needs while increasing nurses' sense of perceived care provision efficacy. Implications for this study are far reaching especially as they relate to the organization of work-related support and resources. The expansion and future use of

the Online BBS for other nurses and healthcare professionals will be dependent on the outcome of this study.

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Chapter 1: Introduction

1.1 Background

As Canada's population ages and the healthcare system undergoes reform, increased demand is placed on nurses working in long-term care (LTC) to provide care to seniors with advanced cognitive and behavioural needs. These individuals with high-level needs include those who exhibit cognitive disability, restricted mobility, reduced self-care capacity, and significant behavioural disturbances (Pearson & Small, 1994). Often, those with high-level care needs are placed in LTC facilities because of their need for assistance with activities of daily living (ADLs). Approximately 2.5 million seniors in Canada require assistance with one or more ADLs, and three quarters of a million receive assistance because of a persistent health care problem (Keating, Fast, Frederick, Cranswick, & Perrier, 1999). Furthermore, 80 percent of individuals over 64 years of age have at least one chronic disease, and approximately 45 percent have social and physical limitations (Timms, 1995). Although some of those who experience difficulties with ADLs remain in the community, approximately seven percent of Canadians age 65 and over live in institutions (Statistics Canada, 1999).

The institutionalized elderly have the highest likelihood of being diagnosed with a primary or secondary psychiatric disorder. It is estimated that approximately 20 to 68 percent of those residing in nursing homes have a diagnosable psychiatric disorder, and 20 to 66 percent of residents subsequently exhibit some type of behavioural problem (Harper & Grau, 1994; Whall, Grillis, Yankou, & Beel-Bates, 1992). Incidence rates indicate that 29 percent of residents are diagnosed solely with dementia, while 14 percent are diagnosed with dementia in conjunction with another psychiatric disorder (Harper & Grau, 1994).

Dementia, which afflicts as many as 253,000 Canadians over 64 years of age, is of particular salience to this project given that approximately half of those with dementia reside in LTC facilities (Canadian Study of Health and Aging [CHSA] Working Group, 1994*a*). Dementia refers to a cluster of disorders characterized by progressive and irreversible declines in mental functions. Symptoms of dementia include memory loss, disorientation, cognitive decline, inappropriate social behaviour, mood changes, trouble learning new things, communication problems, and changes in personality. As the disease progresses, the patient becomes more dependent on caregivers to manage even very simple activities (CSHA Working Group, 1994*b*). Statistics comparing the severity of dementia with living environment indicate that of those suffering from dementia that live in the community, 45.5 percent have mild dementia, 44.5 percent have moderate dementia, and 10.0 percent have severe dementia (CSHA Working Group, 1994*b*). In contrast, of those seniors suffering from dementia who live in an institution, only 10.9 percent have mild dementia, 33.7 percent have moderate dementia, and an overwhelming 55.4 percent have severe dementia (CSHA Working Group, 1994*b*).

The aim of this study is to address the informal information needs of geriatric nurses with regards to mental health issues, while also creating an environment for networking and support. This was not only intended to address the complex care needs of patients, but also to have an effect on increasing nurses' care provision efficacy and job satisfaction at a time when there are increasing professional demands placed on nurses. As discussed in the following section, both formal and informal educational resources in the area of gerontology and geriatric mental health are often underdeveloped and underutilized.

1.2 Lack of Gerontology and Geriatric Mental Health Information in Nursing Education Curricula

The prevalence of mental health problems in LTC facilities, which affects as many as 80 percent of residents, underscores the importance for nurses working in LTC settings to develop additional skills, resources and professional relationships in the area of geriatric mental health (CHSA Working Group, 1994*b*; Smith et al., 1995*b*). When considering the rates of general gerontological training, Glass and Todd-Atkinson (1999) found that of 164 Registered Nurses (RNs) and Licensed-Practicing Nurses (LPNs), less than half had completed a course in gerontology either in their nursing program or through a continuing education course. Of the nurses who had engaged in gerontological training, an average of 2.3 courses were completed. It should be cautioned that even when nursing students elect to take a course in gerontology, little emphasis is given to geriatric mental health issues despite the relevance of this topic for nurses working in LTC (Lusk, 1999).

Geriatric mental health courses for nurses are offered much less frequently than general gerontology courses (Smith et al., 1995*b*). Mental health courses that exist tend to focus on general adult populations thus neglecting mental health issues specific to an aged population (e.g., mainly geriatric assessment skills, interventions, and evaluation of nursing care; Haper & Grau, 1994; Lusk, 1999). Indeed, nurses have expressed the need for advanced education in the area of mental health in order to assist in providing appropriate and adequate care to a population with increasing numbers and care needs (Lusk, 1999).

An examination of the prevalence of nurses who have engaged in continuing education indicates that approximately 60 percent of nurses working in LTC facilities

have taken part in continuing education programs (Nazarko, 1996; Timms, 1995). Although a cursory glance at this statistic is encouraging, a study by Nazarko (1996) revealed that almost one-quarter of first level nurses (registered), and one-half of second level nurses (enrolled) had not updated their professional skills since graduation. In order to understand the reason for the lack of participation in professional skills updating programs, it is necessary to consider the barriers to participation as described by the literature.

In a study by Smith, Mitchell, and Buckwalter (1995*a*), nurses indicated that a major barrier to training was the fact that Administrators and Directors of Care (DOCs) viewed other job responsibilities as being more important than ongoing education. Gifford and Edwards' study (1994) conveys the same sentiment. Nurses in this study reflected positively upon knowledge gained through a conference intervention and described themselves as being amenable to change, but they found it difficult to apply newly gained knowledge in the workplace because of the lack of support from their administrators and colleagues. Overall, factors that inhibit participation in continuing education included: facility policies; increased care demands of patients; decreases in staffing; and increasing caseloads which have resulted in nurses feeling overloaded and overworked (Gifford & Edwards, 1994). If formal and informal educational programs are to be truly effective, then supportive environments need to be created in which information learned can effectively be put into practice.

1.3 Web-based Computer Assisted Instruction and Online BBS

In response to the barriers presented in traditional forms of continuing education, Web-based computer assisted instruction (CAI) has emerged as a major information

forum for rapid distribution and exchange of up-to-date information (Cho & Park, 1998; Desborough, 1999). Web-based CAI often takes place in the form of listserves/newsgroups, Online bulletin boards, and Web-based conferencing systems (Bowers, 1997; Gomez, 1998; Jaberg, 1996; Lakeman, 1997; Salvage, 1999; Waldo, 1998). This Internet-based information medium has been identified as a cost effective way for nurses to network and share information. Gomez (1998) observed that by taking advantage of the opportunities for information sharing and networking through Web-based CAI, increases not only knowledge base but also collegiality. Networks created through Web-based CAI can foster dialogue pertaining to good healthcare practice(s), encourage practice-based research and dissemination of knowledge, encourage innovation in practice, and provide practical support for clinicians working toward these goals (Salvage, 1999). When evaluating the "Good Practice Network," Salvage (1999) found that nurses who engaged in Web-based networking broadened their vision and were able to justify change to practice. The network also provided information, support and encouragement to each other. Furthermore, users were engaged in thought provoking dialogue, and they realized that they were a part of a larger network of nurses. Similarly, Bowers (1997) found that networking through Web-based CAI allowed for the dissemination of ideas, the development of mutual understanding, and a forum for making contacts with other nurses.

An Online BBS was chosen as the forum for Web-based CAI for this study because it is easy to use and understand, and it provides all of the benefits of information exchange and networking shown by previous Web-based CAI nursing studies (Bowers, 1997; Cho & Park, 1998; Desborough, 1999; Gomez, 1998; Jaberg, 1996; Lakeman,

1997; Salvage, 1999; Waldo, 1998). Added benefits of using an Online BBS include the system being administered by the Primary Investigator (PI), allowing postings and responses to be anonymous, yet monitored/controlled by the PI. Often when information is posted to a listserve/newsgroup, information is lost when respondents respond to the individual sender over the group list. By posting to a general list, not only does the sender remain anonymous, but it also ensures that all postings are posted to the general list. Furthermore, participants do not need to have access to an e-mail account in order to participate, as is the case with listserves/newsgroups. Online BBSs have the added benefit of being asynchronous which means that nurses can post messages at a time that is most convenient. This feature is particularly advantageous considering the heavy workload of nurses and the fact that most work shifts.

1.4 Overview and Rationale

As previously discussed, few nurses working in LTC have either formal or informal gerontology or geropsychiatric training (Glass & Todd-Atkinson, 1999; Harper & Grau, 1994; Lusk, 1999; Smith et al., 1995*b*). In response to the paucity of training for nurses working in LTC, an Online BBS will be developed and piloted in order to determine whether this medium of information exchange effectively meets nurses' geropsychiatric information needs. This study will therefore examine the effectiveness of the Online BBS in meeting nurses' information needs and their ability to network and feel supported by colleagues. These two objectives will be considered as to whether the Online BBS has an impact on increasing nurses' sense of job satisfaction, and their perceived ability to provide adequate and appropriate client care.

Malcolm Knowles' adult learning theory will form the basis for the theoretical framework used in this paper (Galbo, 1998; Jarvis, 1998; Tisdell & Taylor, 1999). This paradigm will create a context for understanding the principles employed in informal nursing education. Following this discussion will be an examination of online communities and networks which will be supported by current studies conducted in the area of online nursing education. Finally, a review of literature will conclude by comparing adult learning theory to Internet-assisted instruction in order to assist in the development of a comprehensive, synthesized model.

This study is timely as there is no consensus in the literature to adequately address whether the use of an Online BBS is an effective and efficient medium for the dissemination of geriatric mental health information, networking and support in an informal learning context. Although much has been written in the nursing literature regarding the need for more geropsychiatric mental health information (Glass & Todd-Atkinson, 1999; Harper & Grau, 1994; Lusk, 1999; Smith et al., 1995*b*), few studies have proposed means to meet the information needs of this population. Furthermore, existing online education studies tend to examine formal education programs with a focus on formal distance education. Although continuing education and informal training programs exist, nurses also need a flexible and supportive forum to share information especially at a time when there is much dissent between nurses and government.

Chapter 2: Literature Review

2.1 Theoretical Framework: A Focus on Adult Learning Theory

The art and science of helping adults learn (more formally known as Andragogy) was first proposed by Malcolm Knowles in 1967 (as cited by Jarvis, 1998). Andragogy is a theory that Knowles adopted from a European educator named Dusan Savicevic (Tisdell & Taylor, 1999). According to the theory of andragogy, adults are seen as self-directed learners who are unique due to their personal experiences. Those guided by this humanistic paradigm view adult education as "helping others reach personal fulfillment via self-directed learning" (Tisdell & Taylor, 1999, p.8). The theory states that learning needs come from the innate desire to face daily challenges. Therefore, students become "self-teachers", as they know best about their own learning needs.

Andragogy emerged from the more traditional model of training whereby an "expert" would teach students new information or skills in his/her area of expertise. The traditional model of training was seen as ineffective as it focused on didactic learning, thus giving students little opportunity to apply the new skills or acquired knowledge (Galbo, 1998). Andragogy moves beyond this more traditional model of training in that the trainer acts as a "technician" who prepares a set of procedures whereby learners determine their learning needs (Galbo, 1998). The role of the technician is to also help students apply their newly learned information into their current practice.

The main criticism of Knowles' theory stems from the fact that it sees learners as homogeneous, with differences determined mainly by their learning needs and personality. As a result, there is little recognition that learners come from diverse socio-cultural backgrounds, with different learning needs and opportunities to engage in

education. With these limitations in mind, the guiding principles of adult learning theory are used to facilitate the development of an integrated model for this study since it acknowledges diversity of learning needs.

As determined by previous studies, the ideals of the humanistic-educative paradigm on which many nursing curricula are grounded are congruent with computer-mediated, online education strategies (e.g., Andrusyszyn, Iwasiw, & Goldenberg, 1999; Niederhauser, Bigley, Hale, & Harper, 1999; O'Brien & Renner, 2000). Learners are seen as self-motivated participants interacting with others taking part in the same learning experience (Andrusyszyn et al., 1999). This study will apply those adult learning theory principles that emphasize the importance of allowing learners to participate in needs assessments, determine learning processes, and evaluate their professional growth experiences. For example, the pretest questionnaire enabled participants to evaluate and express their own learning needs. In addition, the Online BBS was used as an "open-forum" whereby participants could be creative in having their learning needs met either through dialogue with colleagues, working through case studies (i.e., patient specific problems), or posting and using online resources. By using a dynamic "open forum," participants were given the chance to engage in both the role of "teacher" (respondent) and "learner" (post questions/case studies). Since the participants are responsible for creating the dialogue exchanged on the Online BBS, it is necessary for them to engage in both roles in order to achieve a successful outcome. Opportunities were also provided for participants to try new practices and then discuss them with colleagues. Finally, participants underwent self-evaluation to determine whether this mode of ongoing education, networking, and support met their information and professional practice needs.

The following section provides an overview of communities and virtual communities followed by an examination of the online continuing nursing education literature. Lastly, there will be a discussion comparing the similarities in the underlying theoretical frameworks of adult education and online education that will provide the basis for creating and testing an integrated model for this research.

2.2 Online Virtual Communities and Networks

Traditionally, the word community has been used to describe a group of people living in the same locality, under the same government; however, community can also refer to a group or class sharing common interests (Emerman, 1997). The essence of community is communication or the exchange of ideas which becomes evident when considering the origin of the word. The word community derives from the Latin *communis* meaning common, the same root used for "*communicate,*" which is defined as "to make known, impact; to display manifest; to have an exchange of ideas" (Emerman, 1997, p. 63). The work of Wellman and Hampton (1999) extends this notion by using the concept of networks to support the idea that communities are defined to a greater extent by communication than physical boundaries. Although people tend to view the world in terms of groups, Wellman and Hampton (1999) argue that they also function as networks. In networked societies, "boundaries are more permeable, interactions occur with diverse others, linkages switch between multiple networks, and hierarchies are flattened and more recursive" (Wellman & Hampton, 1999, p. 648). Since communities are based on social exchanges rather than on spatial proximity, virtual communities can also exist according to this operational definition.

The advent of cyberspace has forged a debate regarding the implications of forming and maintaining interpersonal relationships online. Skepticism regarding computer-mediated communication (CMC) stems from the premise that it disconnects us from each other, "having us 'interfacing' more with computers and TV screens than looking in the face of our fellow human beings" (Fox, 1995, as cited in Wellman & Hampton, 1999, p. 649). Although the lack of face-to-face communication is a concern for many opponents of online networks and communities, in reality, CMC allows practitioners to stay abreast of rapidly advancing clinical information, share comments and advice, and create opportunities for collaborative information sharing (Bergren, 1999; Bowers, 1997; Gomez, 1998; Jaberg, 1996; Lakeman, 2000; Tietze & Huber, 1995; Waldo, 1998; Wright 1996). Ultimately, online networks allow nurses to stimulate and share good healthcare practices, disseminate practice-based research, current knowledge and informed experience, encourage innovation in practice, and provide practical support for all clinicians working towards these goals (Salvage, 1999). Through the examination of current Online Continuing Nursing Education studies, it is hoped that researchers will learn how to develop creative ways for nurses to network and share ideas that will be supported by their peers both online and off.

2.3 Online Continuing Nursing Education: The Current Situation

Through high-speed electronic linkages, professionals who might otherwise interact infrequently can function as a virtual healthcare team via the rapid exchange of virtual information and interactive deliberation and decision-making (Billing & Rowls, 2001; Williams, Ricketts, & Thompson, 1995). The Internet is seen as a diverse tool for marketing, educating staff and patients, and enhancing communication and efficiencies

throughout organizations. An emerging body of literature that will be explored is distributed education via the Internet.

One of the main benefits of distributed education is that the Internet can be accessed from virtually anywhere, at any time, thus offering considerable flexibility in the use of this medium. Further benefits include its relative cost, reliability, and accessibility (O'Brien & Renner, 2000). As mentioned earlier, healthcare knowledge is constantly changing and expanding. As a result, it is crucial for nurses to have access and stay abreast of current information in order to aid them in addressing complex care problems (O'Brien & Renner, 2000). Distributed education via the Internet allows users to learn at their own pace, review messages and information as often as they like, and learn in multiple settings (e.g., home and work). It also allows users to pursue information that is most pertinent to their practice, network with a community of healthcare professionals, and discover that information resources are readily available when needed (Marcotte, 1999; O'Brien & Renner, 2000; Ribbons, 1998).

An e-mail survey was conducted by Lakeman (2000) to determine what psychiatric nurses were using the Internet for, how they learned to communicate using the Internet, and how they believed the Internet might help the profession in the future. Lakeman (2000) discovered that the majority of nurses used the Internet for personal or professional communication. This finding was supported by Santi (2001) who found that nurses used the Internet mainly for e-mail, followed by gathering information for personal needs, health information, and education. Respondents of Lakeman's study (2000) also viewed the Internet as having the potential to facilitate a global network and culture of psychiatric nursing. Of the 52 respondents, 41 used the Internet to network

with others and 45 used it to obtain information. Several respondents indicated that the main reason for using CMC was to share ideas, perspectives and interests, and to receive support and advice. When asked how the Internet assisted in the practice of psychiatric nursing, the majority indicated the importance of keeping up-to-date with new practices. Respondents also described the ease and speed at which they were able to obtain current information. Also identified as important themes were exposure to different ideas and perspectives, and developing increased awareness and insight into professional issues (Lakeman, 2000). Respondents were also asked how they felt the Internet might affect the work of psychiatric nursing in the future. One important theme that emerged was the reduction of boundaries, which was viewed as potentially leading to a greater understanding and appreciation of cultural differences.

A study conducted by Niederhauser et al. (1999) incorporated online case studies into an Internet nurse practitioner course in order to create an easy-to-use, easy-to-access resource for clinical practice. Prior to the first day of class, students were required to take a basic, introductory level, university-sponsored "Introduction to the Internet" course. Topics included computer access, e-mail, Internet use, and searching methods through a network browser. Neiderhauser and colleagues (1999) believe that the "format or the delivery of content allows students to be self-directed, to take control of their own learning, and obtain the useful lifelong skills of mastering the Internet as a resource tool that can be applied immediately to other personal and professional life situations" (p. 417).

Through analysis, faculty found that the written discussions that occurred via the Internet were more thoughtful and analytical than the verbal dialogue that often occurs in

a classroom (Niederhauser et al., 1999). Students welcomed the online format and content of the cases and spent an average of five to ten hours online each week. Another outcome observed by the faculty was that students were independent and empowered to learn at their highest potential. For example, students readily took control of the discussions by questioning other's ideas, prioritizing concerns, and developing critical management plans (Niederhauser et al., 1999).

Andrusyszyn and colleagues (1999) also conducted a study that examined the perceptions of students who participated in a graduate-nursing course using a computer conferencing system. Computer conferencing allowed learners to post messages, partake in asynchronous and synchronous chats, and organize chats and postings according to topic-specific folders. The basic premise of the Andrusyszyn et al. study (1999) was that the use of an Online Conferencing System would allow participants to share information, create knowledge, and connect socially with others sharing the same experience, while developing a sense of community through a medium that is unlimited by time or place. This premise has been supported by other studies that have found use of the Internet in promoting active learning to be the same or greater than classroom learning (Harasim, 1990*b*, as cited in Andrusyszyn et al., 1999; Woo & Kimmick, 2000). These studies have also found that students valued the experiential component, professional networks, access to experts in the field, and the delivery format. Of importance to this study is Andrusyszyn et al.'s (1999) examination of satisfaction with the medium, which includes: comfort with using the computer conferencing system at the beginning and conclusion of the course; overall enjoyment with learning over the Internet; consideration

of taking another course which uses computer conferencing; and overall satisfaction with learning.

The results of Andrusyszyn et al.'s study (1999) are similar to others that have examined distributed education via the Internet. Students indicated that the discussion was richer than in class, more challenging, and the depth of the discussions and degree of reflection were superior to that encouraged in most classroom contexts (Andrusyszyn et al., 1999; Neiderhauser et al., 1999). Students felt that online conferencing was an effective way to promote learning in the profession of nursing and perceived their interactions to be positive. Sentiments such as "everyone was able to freely express views and the audience was captive" were expressed (Andrusyszyn et al., 1999, p. 275). Although participants noted that a positive online learning climate had developed, and that they felt they were part of a learning community, perceived isolation was also apparent. These feelings were evident in comments such as, "I did feel isolation and disconnection while online – longed for human contact at times," and "I must admit I truly missed the physical presence of my classmates" (Andrusyszyn et al., 1999, p. 276). Andrusyszyn et al. (1999) hypothesize that the reason for feeling isolated may have been related to the camaraderie experienced by nursing students in the program's face-to-face classes. Despite some feelings of isolation, students were generally satisfied and, not surprisingly, their comfort with the medium increased towards the end of the course. All participants expressed that they were able to ponder previous discussions, synthesize content, derive new and deeper meanings, and connect at a time and place most suitable for them (Andrusyszyn et al., 1999).

Although these cited studies generally point to the benefits of distributed education via the Internet, there are several limitations that must be kept in mind if the development of innovative professional skills updating initiatives is to occur. Few online nursing studies have been guided by theoretical principles such as adult learning theory, and the majority of studies only examined the differences between online learning and face-to-face learning with little attention to participants' learning needs and objectives. Furthermore, this area of study lacks valid and reliable instruments for measuring Internet education initiatives. For instance, studies that examine learning outcomes often use tools that measure whether or not course objectives were met through standard university course evaluations, with few adaptations made to explore the specific objectives of online learning (Woo & Kimmick, 2000). Also of note, few studies have conducted needs assessments exploring the learning needs of students, their previous experiences with using this medium, comfort using online modes of information dissemination, and what participants hope to gain from use of the Internet to address their information needs. All these issues need to be considered through well designed studies. Other areas that need to be addressed are the inclusion of fully articulated objectives at the outset of the study.

Developers of online education programs and professional development initiatives also need to account for the various barriers to using the Internet, especially among those who are unfamiliar with the Internet. In order to decrease initial barriers, participants should have access to specially designed Beginner Internet courses/seminars that use interactive, hands-on teaching methods (Andrusyszyn et al., 1999; Young et al., 1999). Lastly, authors conclude that the Internet provides a tool for inquiry-based learning and improved communication for students learning at a distance (Andrusyszyn et al., 1999;

Young, Marks-Maran, & Macklin, 1999). Much, however, remains to be known about the informal learning needs of practicing nurses, and whether an Online BBS is a useful tool for meeting their information needs.

2.4 The Development of an Integrated Model

Although few studies have considered the underlying principles of adult learning theory to guide their research, there are numerous parallels that can be made between adult learning theory and Internet-assisted instruction. The following section will highlight the main principles of Malcolm Knowles' approach to adult learning while comparing them to those of Internet-assisted instruction in order to arrive at an integrated model that will be used to guide this study. The work of O'Brien and Renner (2000) titled "Nurses online: Career mobility for registered nurses" will be used to guide this comparison.

2.4.1 A Comparative Approach to Adult Learning Theory and Internet-Assisted Instruction

A basic premise of adult learning theory is that learners are self-directed (O'Brien & Renner, 2000; Tisdell & Taylor, 1999; Young et al., 1999). In terms of acquiring Internet skills, it is argued that adults gain these skills through a combination of self-directed learning, informal learning within a work group, and participation in workshops or short courses (Cahoon, 1998). Internet-assisted instruction allows the learner to be self-directed, to take control of their experiences, to advance at their own pace, and to make decisions about the learning needs that they wish to have met (O'Brien & Renner, 2000).

Adult learning theory also acknowledges that learners bring the quality and quantity of their life experiences to the learning situation (O'Brien & Renner, 2000).

Thus, learning is reflective as it develops and builds upon the learner's existing knowledge. According to Bell, Chelf, and Geerdes (2000), "learning is the process of internalizing an idea and the repetitive use of a skill related to that idea so it is fully integrated into the way learners think and engage in nursing practices" (p. 111). RNs bring to the learning situation a plethora of different skills and life experiences that are ideal for sharing in the context of an interactive online discussion (O'Brien & Renner, 2000). Through dialogue fostered by posting and responding to case studies and recommending resources such as journal articles and Websites, it is assumed that the information needs of nurses will be met, thereby having a positive impact on their clinical practice.

Another assumption of adult learning theory is that the "learner becomes ready to learn when they experience a need to know or to do something to perform more effectively in some aspect of their lives" (O'Brien & Renner, 2000, p. 18). For instance, many nurses working in LTC engage in ongoing learning in order to stay abreast in a rapidly changing context of care. The importance of continuing to be up-to-date is due to the constant revisions made to appropriate care techniques and policies, as well as the varied physical and behavioural needs of their clients. In order to understand the motivating factors for ongoing learning, it is necessary to ascertain at the outset why they are participating in the study and what they hope to gain.

Adult learning theory also assumes that learners engage in an educational activity after they have encountered or experienced an identified need. Therefore, they come to the learning situation with a life-centred, task-centred, or problem-centred orientation to learning. Learning objectives are met if they obtain the ability/skills to answer a

question, solve/complete a task, or live their lives in a more fulfilling way (O'Brien & Renner, 2000). The Internet thus allows nurses to build and maintain the lifelong learning skills that they need. Furthermore, by allowing nurses to post and respond to problems and case studies, a dialogue is created that is problem-based and task oriented.

It is also assumed that adults are life-centred in orientation and learn more effectively if information can be applied in the context of their lives (O'Brien & Renner, 2000). In order to be effective, material must be presented in a standard form (i.e., case study), applicable to the environment (i.e., LTC), situation specific, well expressed, and discussed critically (i.e. advantages and disadvantages of implementing a policy or care technique). Although the learner may find the information applicable, the effectiveness of this approach depends largely on the supportiveness of the environment. Therefore, it is necessary to create supportive contexts for learners that include acceptance from administrators, DOCs, managers, and their colleagues.

Finally, adult learning theory contends that the motivation to learn comes more readily from internal motivators (i.e., better quality of life) than external motivators such as monetary rewards (O'Brien & Renner, 2000; Tisdell & Taylor, 1999). As in most learning situations, self-regulation and active participation are essential for online learning (Shrum, 1998).

In summary, this discussion reveals that the principles of adult learning theory and those of Internet-assisted instruction are compatible. Since participants in this study are both adult learners and Internet learners, the two sets of principles can be integrated into a more comprehensive, synthesized theory titled 'Adult Internet-Assisted

Instruction.' The following section will describe how this theory has guided the following study.

2.4.2 Adult Internet-Assisted Instruction: An Integrated Model

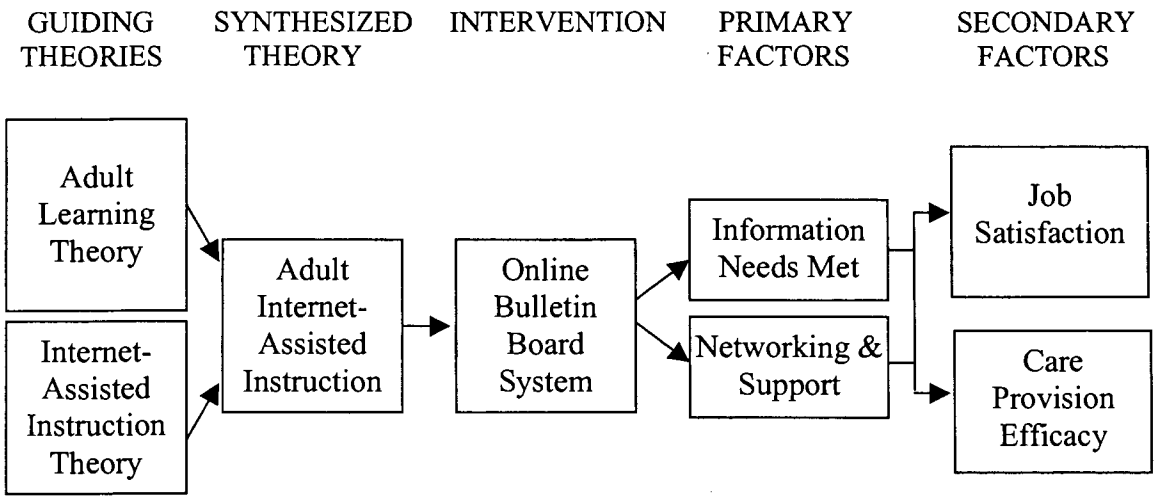
Using the above comparisons, an overall guiding framework has been developed that integrates the principles of adult learning theory and Internet-assisted instruction to form a comprehensive synthesized theory of adult Internet-assisted instruction (see Figure 1). Adult Internet-assisted instruction theory was used to guide the design and implementation of the intervention as well as guide the development of study questions. The formulation and testing of this model allows us to determine whether use of an Online BBS to facilitate informal adult Internet-assisted instruction affects nurses' needs for information, networking and support.

An Online BBS was chosen because this medium can be adapted to the principles of adult Internet-assisted instruction. The Online BBS is an asynchronous form of information exchange in keeping with the premise that users can post and respond to questions, resources and case studies at a time that is convenient, thus supporting a problem-based/self-directed learning philosophy. It is assumed that motivation to use the Online BBS comes from the user as they must choose to go to the Online BBS to view new postings. The effectiveness of the Online BBS depends on the depth of dialogue between users.

The success of the Online BBS will be determined by the degree to which it positively affects participants' need for information, networking and support. Therefore, if the Online BBS proves to be effective, it is expected that participants will subsequently experience higher levels of job satisfaction and perceived quality of patient care.

Although it is expected that positive change will be observed over time, the overall success of this intervention will depend on whether the personal learning objectives are met as dictated by adult Internet-assisted instruction.

Figure 1: Guiding Theoretical Framework



2.5 Hypotheses

The above integrated model (Figure 1) is proposed as a guiding framework for the following hypotheses. The first and second hypotheses are primary factors since they are direct outcomes of using the Online BBS. Hypotheses three and four are treated as secondary factors since they are indirect outcomes of using the Online BBS. It is important to note that if both hypotheses one and two are rejected, then hypotheses three and four must also be rejected, as any relationship found in hypotheses three and four will be due to confounding variables as opposed to the intervention itself.

A quasi-experimental design was implemented to test the following hypotheses. Nurses who joined the study were assigned to either an intervention or control group and were required to complete a pretest and posttest questionnaire. Hypotheses will be tested

with regard to how mean scores on primary and secondary factors changed over time (i.e., from pretest to posttest) for those in the intervention compared to the control group.

Hypothesis 1: Adult Internet-assisted instruction through the use of an Online BBS will reduce information needs.

For the purposes of this project, information needs are defined as any need identified by a practicing nurse related to knowledge, skills, or attitudes which can be resolved through the use of an information resource (Rasch & Cogdill, 1999). Within the context of this study, information resources are defined as posting on the Online BBS, links to other Websites, online journals as well as more traditional forms of information resources such as text books, journal articles, and drug reference manuals.

It is hypothesized that posttest mean scores will be lower than pretest mean scores for the variable measuring information needs (representing a lowering in the need for information over time). Subsequently, it is hypothesized that there will be no change or a positive mean change for those in the control group when comparing Time 2 (T2) and Time 1 (T1) information need scores.

Hypothesis 2: Adult Internet-assisted instruction through the use of an Online BBS will positively affect nurses' degree of networking and support.

Networking and support, the second factor in the integrated model, pertains to profession-specific experiences. Thus, participants are asked to comment on how often they network and collaborate with nurses who work outside their facility.

As suggested by the review of literature, nurses who interact online often state that they are afforded greater opportunity to network with a community of healthcare professionals at a time that is convenient for them. Indeed, nurses in Lakeman's (2000)

study indicated that RNs used the Internet almost as much for networking as they did for gathering information.

Overall, it is expected that posttest mean scores for the variable measuring networking and support will be significantly higher than pretest scores for those in the intervention group since interacting on the Online BBS provides participants a forum for networking with other RNs in similar situations. Thus, it is hypothesized that there will be a positive significant mean change for those in the intervention group, and no change or a negative change for those in the control group when comparing networking and support measures at both points in time.

Hypothesis 3: Adult Internet-assisted instruction through the use of the Online BBS will have a positive impact on nurses' perceived level of job satisfaction.

For the purposes of this study, job satisfaction has been operationalized as the degree of positive affective orientation toward employment (Mueller & McCloskey, 1990; Slavitt, Stamps, Piedmont, & Hasse, 1978). Participants will be asked to rate overall satisfaction with their jobs, as well as their satisfaction with various components of their job.

As emphasized by the literature, nurses with unmet information needs are more likely than their recently educated counterparts to feel dissatisfied with their jobs (Castiglia, Hunter, & McCausland, 1986; Robertson, Higgins, Rozmus, & Robinson, 1999). It is therefore hypothesized that meeting nurses' needs for information, and/or networking and support will have a positive outcome on their perceived sense of job satisfaction.

Pretest and posttest mean scores will be compared in order to determine whether a significant change in job satisfaction is observed before and after use of the Online BBS. It is hypothesized that the posttest mean scores for job satisfaction will be significantly higher than pretest mean scores for the intervention group. Therefore, it is assumed that there will be a positive mean change for those in the intervention group and no change or a negative mean change for those in the control group when comparing scores on job satisfaction measures over time.

Hypothesis 4: Adult Internet-assisted instruction through the use of the Online BBS will positively affect nurses' care provision efficacy.

Although quality of care is an ideal result of effectively meeting the information needs of nurses, few studies have explored this outcome substantively. While nurses often engage in ongoing learning initiatives, the literature suggests that supportive environments are often not in place to help them effectively apply new information to their clinical practice. It is hypothesized that the support gathered through the Online BBS will help to facilitate the integration of information into practice.

It is expected that the posttest scores for care provision efficacy will be higher than pretest scores for those in the intervention group. This relationship is expected because not only does access to the Online BBS give nurses the opportunity to have their information needs met, but it also gives them the chance to feel supported by their colleagues therefore potentially increasing their comfort and confidence with providing quality of care. Conversely, it is expected that there will be no change or a negative mean change on perceived care provision efficacy scores for those in the control group.

The following section examines the methodology employed in this study. A discussion on the research design, sampling methods, measurement tools and data analysis will be included.

Chapter 3: Methodology

3.1 Research Design

The goal of this study was to determine whether use of an Online BBS is an effective means to meet the geropsychiatric information needs of nurses working in LTC facilities. In order to address this research question, this study was conducted in conjunction with the Geropsychiatric Education Program (GPEP) of the Vancouver/Richmond Health Board (V/RHB). The GPEP was developed in 1995 as a response to the downsizing of Riverview Hospital, the province's largest psychiatric institution. While numerous elderly patients were housed in the community, others were relocated to residential care facilities. Residential care leaders in Vancouver and Richmond advised the [then] Vancouver and Richmond Health Departments of the need for a responsive geropsychiatric education program with provision for staff replacement. The GPEP was developed to address the educational needs of community healthcare providers who were required to care for an increasing number of residents with pronounced geropsychiatric needs.

Through the provision of educational resources and training, using adult learning theory and best practice, the GPEP strives to enhance the abilities of community caregivers in Vancouver/Richmond to deliver consistent, high-quality, person-centred, geropsychiatric care to older adults, and to provide support to their families. The geropsychiatric program is guided by practice, education, and program principles, which provide a foundation for how the GPEP employees think, plan, educate, and interact with their clients. The GPEP's practice principles are based on the understanding of personhood and a commitment to person-centred care. The latter is defined as care that addresses the uniqueness of each client/resident, builds on individual strengths and

abilities, enhances personal control, and promotes meaningful reciprocal interactions between clients/residents and their caregivers.

The GPEP's mandate includes a wide array of services for both formal and informal caregivers. Specific resident-based services include inservices, care reviews, role modeling and coaching, and long-term projects to help facilities evaluate, integrate and achieve the person-centred care philosophy. Other services include the Caring and Learning Together program (intended to educated informal caregivers about the needs of their loved-ones), and the Nursing Resource Network. The Nursing Resource Network was formed in 1998 as a means of supporting geropsychiatric clinical practice in LTC. Since nurses play a key clinical and leadership role in LTC and frequently work in isolation with minimal support, the network was seen as a way to support nurses in their roles. The key outcomes of the network are to: develop advanced knowledge in geropsychiatry; act as internal resources and role models in their facilities; advance geropsychiatric nursing practice as practice leaders; support each other through problem solving; and network with other nurses in LTC facilities (GPEP, 2002).

Overall, an evaluation of the GPEP's programs indicates a high level of satisfaction (Sauro, Jansen, & Hibbard, 2000); however, an informal need's assessment conducted with members of the Nursing Resource Network indicated that there is a need to develop innovative initiatives for continued information sharing. As evidenced by low moral and high turnover rates, nurses working in LTC also need a forum whereby professional networks can be created in conjunction with supportive environments (Sauro et al., 2000). This study was thus undertaken to address both the informal information needs of nurses as well as their need for a diverse, supportive environment for

networking. Much of the guiding framework for the Online BBS was derived from the Nursing Resource Network's objectives as they not only worked well for the GPEP, but also for the South Fraser Health Board who had started an effective nursing network in 1995.

3.2 Sampling Requirements, Procedures and Characteristics

3.2.1 Sampling Requirements/Group Assignment

A convenience sample was derived for this research. The total sample was comprised of 47 participants, all of whom received a pretest and posttest questionnaire. Twenty participants were assigned to a control group and 27 to the intervention group.

Subjects were initially identified for inclusion based on the following eligibility criteria: participants had to be RNs working in LTC facilities in the Vancouver/Richmond area; and had to have at least minimal computer experience and access to the Internet. The rationale for requiring that an RN work in a LTC facility was based on the knowledge that nurses working in LTC facilities have been identified as having the lowest levels of job satisfaction and the highest level of unmet information needs and turnover (Castiglia et al., 1986; Mueller & McCloskey, 1990; Rasch & Cogdill, 1999; Robertson et al., 1999; Slavitt et al., 1978). RNs as opposed to other healthcare workers were also selected to ensure that participants practiced from the same professional standards.

Participants were required to be working in the Vancouver/Richmond area as this is the main group of healthcare providers that the GPEP services. Therefore, nurses in the sample were pre-exposed to the same opportunities to engage in continuing education programs and inservice training offered by the GPEP. Due to a small initial response

from nurses working in the Vancouver/Richmond area, however, the eligibility criteria were expanded to include RNs working in care facilities across Canada. Although revising the recruitment criteria may have introduced a bias in terms of participants' prior exposure to the GPEP and its programs, this revision allowed participants from outside the Vancouver/Richmond area to have access to a geropsychiatric intervention that was unique to its Health Region. In other words, participants from outside of the Vancouver/Richmond area may have been more eager to participate as geropsychiatric information is not readily available to them through the GPEP's services. Another benefit of expanding the recruitment criteria is the possibility of increased generalizability of study results to nurses working in LTC facilities located in major urban and rural centres nationwide.

An additional inclusion requirement was that all participants had to have at least minimal computer experience to ensure that they could turn on a computer, use a mouse, and a keyboard if they were selected to be in the intervention group. Prior computer experience essentially reduced the amount of information that needed to be covered in the training session on *How to Use the Internet and Online Bulletin Board System* as well as the amount of technical support that needed to be provided. Lastly, participants were required to have access to the Internet so that they could access the Online BBS.

Participants who did not have access to a computer or the Internet were able to take part in the study as control participants ($n = 7$). In addition, those who were given access to the Online BBS but did not use it ($n = 13$) were also included in the control group. All control group participants were RNs working in a LTC facility within Canada. The provincial breakdown of participants includes: 34 participants from British

Columbia; four from Alberta; and one from Ontario, Prince Edward Island, New Brunswick, and Newfoundland.

3.2.2 Sampling Procedures

Permission to undertake this study was obtained through letters of introduction faxed to the Directors of Care (DOCs) of LTC facilities in Vancouver/ Richmond (n = 36; see Appendix A). Letters were sent to the DOCs because, as evidenced by the literature, one of the major barriers to participation in professional skills up-dating initiatives is the lack of support from administration. Approval from the ethics review committee of Simon Fraser University was also obtained on the condition that DOCs from each participating facility were contacted and consented (see Appendix B). Follow-up calls were also made to the DOCs so that they could provide verbal consent as to their willingness to assist in the recruitment of participants.

Packages containing a cover letter (see Appendix C), three thesis description sheets (see Appendix D), and three recruitment posters (see Appendix E) were mailed to the DOCs who consented to the recruitment of participants from their facility (n = 30, 83%). The covering letter reiterated the nature of the project, asked for the DOCs help in posting the information, and thanked them for their interest and involvement in the study. Interested participants were asked to contact the PI by phone or e-mail. Once contacted, the PI described the nature of the study, its purpose, and how it would be carried out. Once it was verified that participants met the eligibility criteria, packages were mailed containing the introduction letter (Appendix F), a consent form (Appendix G), and a pretest questionnaire (Appendix H). The purpose of the introduction letter was to reintroduce the study as well as provide participants with a user name and password for

logging access to the Online BBS. Also included in the package was an information sheet with instructions explaining how to log onto the Online BBS (Appendix I) as well as the 'netiquette' or site's etiquette (Appendix J).

Due to job action by nurses between April and August of 2001, only nine participants responded to the initial call for participants. As a result, the sampling frame was expanded to include RNs working in care facilities in the Lower Mainland. In order to maintain the integrity of the recruitment strategies, the above procedures were repeated with the DOCs from the new catchment area ($n = 31$) and the start date of the study was postponed. This gave prospective participants three weeks to contact the PI. Nine more participants were recruited as a result of this study.

Participants who met intervention group inclusion criteria, who wanted a refresher on how to use the Internet and who worked in the Lower Mainland were encouraged to register for a three-hour session entitled, "How to Use the Internet and Online Bulletin Board System." This three-hour course was developed by the PI to reduce participant anxiety with use of this novel form of information exchange. The course was based on the principles of adult learning theory, as an interactive hands-on learning experience (see Appendix K for the Educational Package). The information contained in the educational package was based on a course material package titled, "Using Internet services in health organizations: Module 2, How to use Internet services" which was sponsored by the Southwest Region Health Information Partnership (Westmacott, 1997). Although staff replacement was arranged by the GPEP for those working in the Vancouver/Richmond area, only four participants attended the session, all of whom varied in Internet familiarity and skill level.

A third strategy employed to recruit participants entailed a call for participants on the GPEP's Website and through the Canadian Gerontological Nursing Association's national listserve. Once the PI was contacted, participants were mailed packages that contained the same information as previously described (an information sheet stating how to access the Online BBS, the site's Netiquette, user name and password, a consent form, and a pretest questionnaire). These two means of recruitment resulted in four additional participants, all from Central and Eastern Canada (Ontario, New Brunswick, Newfoundland, and Prince Edward Island).

After these three recruitment strategies were employed, it was decided that the numbers of participants were too low ($n = 22$). As a result, the sampling frame and eligibility requirements were reevaluated. It was decided not only to expand the catchment area, but also to recruit those who did not have Internet access for inclusion in the control group. As a result, revised posters/information sheets were sent to the previously contacted DOCs (Appendix L) in addition to employing a fourth recruitment strategy with a larger catchment area[1].

DOCs from facilities in the interior of BC, Vancouver Island, and Calgary, Alberta were contacted by the PI ($n = 36$). The nature of the study was explained, and the DOCs were asked to assist in the distribution of mailout packages to all RNs working in their facilities. The number of packages mailed to each was determined by the DOCs' approximation of the number of nurses working in the facility. It was emphasized during the introductory call that the RNs did not have to have access to the Internet to participate in this study. The mailout packages contained an information sheet (see Appendix M)

[1] Letters were sent to previously contacted DOCs so that participants who did not have Internet access would have the chance to participate in the control group.

which described the goal of the study, the benefits of participating in the study, and instructions for returning the pretest questionnaire. The package also contained a consent form (see Appendix G) and the pretest questionnaire (see Appendix H). Once questionnaires were returned, those who indicated they had access to the Internet were mailed a second package which included information sheets describing *How to Log On & Use the Online BBS* (see Appendix I), as well as sheets that outlined the netiquette or site's etiquette (see Appendix J). A cover letter that contained the participants' user name and password for logging onto the Online BBS was also included (see Appendix F). Those who did not have access to the Internet became part of the control group. In total, this recruitment strategy resulted in the addition of twenty-five more participants, eighteen who had access to the Internet and seven who did not.

All intervention group participants were mailed reminder letters two months into the study as some may have lost or forgotten their password to the Online BBS (see Appendix N). The package also contained an information sheet that served as a reminder for how to log onto and use the Online BBS as well as the netiquette for the site.

In order to allow for an adequate intervention period, posttest letters (see Appendix O for intervention letters; see Appendix P for control group letters) and questionnaires (see Appendix Q for intervention questionnaires, see Appendix R for control group questionnaires) were mailed to all participants four-and-a-half months after the study began. This timeframe was expanded from three months to four-and-a-half months to allow participants who joined the study later adequate time to utilize the Online BBS. While it would have been ideal if all participants had joined the study at the same time (therefore having the same amount of exposure to the intervention and its

content), this problem was unavoidable due to the numerous unforeseen methodological changes to the sampling procedures. Furthermore, the PI did not want participants who joined the study in the initial stage to loose interest. The lapse in start time, however, was not seen as an overriding methodological problem since the duration of exposure to the Online BBS is not necessarily attributable to the number of times a user logs onto the site, or to its effectiveness in meeting their information, networking and support needs (as these needs are dynamic; Timms, 1995). However, the information content to which participants were exposed may have differed as a function of their point of entry into the study.

Although all participants who had access to the Internet were placed in the intervention group ($n = 40$), not all of them used the Online BBS. This, as discussed below, may have been a result of the period of turmoil in BC during which this study was conducted and, as a result, limited time allocated to effectively participate on the Online BBS. Consequently, those who had access to the Online BBS but did not use it were included in the control group ($n = 13$) in addition to the seven participants who did not have access to the Internet. It should be noted that assignment of control group participants resulted in few statistically significant differences on demographic variables (see Appendix S & Appendix T). Thus, these subsets were combined for further analysis.

Since pretest and posttest questionnaires were coded to match pretest and posttest responses, subject confidentiality was enhanced. Only the PI had access to the list of participants and the corresponding codes.

Despite changes made to the sampling frame and sample procedures, a relatively small overall sample size was obtained ($N = 47$; IG = 25, CG = 17). This sample size

was insufficient to be able to detect an effect with a moderate to small size (i.e., 34 participants are needed in each group to detect an effect size of .35 with 95 percent confidence at an average correlation of .50 among independent variables). In the case of this study, however, only a large effect size of .57 could be detected with 95 percent confidence (power = .80; alpha = .05; average correlation = .54 among independent variables) since there were only slightly more than 14 participants in the smaller group (Stevens, 2002). Since only a large effect size could be supported, the results should be interpreted with caution as there is a greater likelihood of accepting a false null hypothesis (i.e., Type II error).

It should also be noted that two people from the intervention group and three people from the control group dropped out of the study. These five participants did not differ significantly from the other participants on major demographic or Internet characteristics. The main reason for attrition was the fact that nurses were preoccupied with the restructuring of the healthcare system. As one RN stated, "this is a really bad time to be conducting a study...I just haven't had the time to fill out your questionnaire. I'm just one person here and I already feel like quitting because there is too much responsibility and stress placed on me right now" (Anonymous, Personal Communication, June 20, 2002).

3.2.3 History/Political Context

To provide a greater understanding as to why the sampling procedures had to be modified and why a comparatively small sample was obtained, it is necessary to consider the historical/political context.

Over the course of this study, two significant events occurred in the province of British Columbia (the primary target area for the study) that complicated recruitment efforts. First, job action by nurses in British Columbia occurred between April 9, 2001 and August 7, 2001 (British Columbia Nurses Union [BCNU], 2002). The following is a brief timeline of the events that occurred during this four month period.

On April 9, 2001, an overtime ban that would last throughout the following weekend was implemented by nurses along with an on-going ban on performance of non-nursing duties that would last the duration of the job action (BCNU, 2001). On April 25, 2001, job action was heightened when community nurses staged province wide demonstrations. On this day, the government appointed mediator Vince Ready first met with nurses' negotiators and the Health Employers Association of British Columbia (HEABC). On June 18, 2001, the Liberal government announced legislation imposing a "cooling off period" for nurses and paramedical professionals that would require both groups to suspend their job action (BCNU, 2001). This "cooling off period" proved anything but, as the Provincial Job Action Council reacted by designing actions to keep the nurses concerns in the public eye (BCNU, 2001). The announcement of the "cooling off period" resulted in perhaps the biggest demonstration ever by nurses in Vancouver to date which occurred just hours before legislation was introduced in Victoria (BCNU, 2001). Rallies continued in the weeks following the announcement at the Peace Arch border crossing, in the Okanagan Valley, in Kamploops, throughout the Lower Mainland, in the East and West Kootenays, and on Vancouver Island. After numerous meetings between parties, nurses were legislated back to work on August 9, 2001 and a contract was imposed. Due to large fines against the union and any individual nurse who

continued to picket against the court order, the BCNU reluctantly called members to end the job action (BCNU, 2001).

The purpose of the four-month long job action was to send the health regions and the provincial government the message that it is time to remunerate nurse adequately so that the province can attract and retain sufficient numbers of nurses to provide the care for the people of British Columbia now and in the future (Morton, 2001). The nurses' job action and subsequent governmental decisions adversely affected the job satisfaction and morale of nurses working in British Columbia and their willingness and ability to participate in this study.

The second factor that was believed to adversely affect nurses' willingness and ability to participate in this study was the Government of British Columbia's cuts to healthcare that started in January of 2002, and peaked with the announcement of a restructuring plan on April 24, 2002. There was concern that the uncertainty that many nurses experienced over this four month period about the future of the healthcare system, their job security, and the future care of their clients, may have significantly affected their responses on the pretest and posttest questionnaires, as well as the number and type of postings made on the Online BBS. As later discussed (Section 4.4), postings at the onset of the Online BBS reflected more general practice questions and comments concerning the topic of geriatric psychiatry (January, 2002). As the political context became more focused on the future of the healthcare system and nursing in British Columbia, postings reflected these concerns (April, 2002). Thus, the postings made to the Online BBS paralleled the political context over the course of data collection. Many nurses stated that though this study was interesting and important, that they were too preoccupied with the

current changes to healthcare in British Columbia to give their full attention to the study even though their need to access accurate information and obtain support from their peers may have been greater than ever.

3.2.4 Sample Characteristics

The final sample was comprised of 42 participants in total, 25 who had access to the Online BBS, and 17 who served as controls. The sample characteristics will be described as a whole as the two groups did not significantly differ (see Table 1 for breakdown of demographic variables by group). For each relationship, the chi-square value (or Fisher's Exact Test if degrees of freedom = 1) will be given along with whether the relationship was statistically significant. It should be noted that non-significant relationships (denoted as *ns*) mean that no significant differences occurred between groups, or that groups were similar on the given construct.

Descriptive statistics indicate that 88.1 percent of participants were female (Fisher's Exact Test, $p = .38$, *ns*). The large percentage of women in this population is attributed to the fact that nursing remains a female dominated profession.

The mean age of the sample population was 47.90 years ($SD = 9.46$) with a median age of 49.50 years [$\chi^2(30, N = 42) = 18.76$, *ns*]. Ages spanned from 24 to 61 years, a range of 37 years. With respect to marital status, 73.8 percent ($n = 31$) were married or in common law relationships whereas 14.3 percent had never married ($n = 6$), and 11.9 percent were separated/divorced ($n = 5$) [$\chi^2(2, N = 42) = .94$, *ns*]. Participants in this study were asked whether English was their first language. Approximately, 81 percent of the respondents spoke English as a first language, while 19 percent indicated a language other than English as their first language (Fisher's Exact Test, $p = .44$, *ns*).

English as a first language was not required as a criterion for participation because all participants were moderately to highly confident with reading, writing and speaking English as indicated by the pretest questionnaires.

When examining level of education, the largest proportion of participants (n = 17 or 40.5%) had a Bachelor of Science degree in nursing followed by those who held a certificate/diploma (n = 12 or 28.6%), those who obtained a hospital based degree (n = 7 or 16.7%), and those who obtained their graduate degree in nursing or a related field [n = 5 or 11.9%; $\chi^2(4, N = 42) = 1.62$, *ns*]. Only one participant stated that s/he had obtained another level of education (i.e., Ph.D. in Health Services). The high level of education is not surprising considering that all of the participants are RNs. It should be noted that the majority of these nurses (78.6%) obtained their education in Canada while the remainder received their education in the United States, Eastern Europe, or India [$\chi^2(3, N = 42) = 1.58$, *ns*].

Another important demographic variable examined was the employment status of the participants. The majority of participants worked full-time (66.7%), followed by part-time (26.2%), and casual designations [7.1%; $\chi^2(2, N = 42) = 1.22$, *ns*]. The shifts worked most often by participants included days (66.7%), evenings (23.8%), mornings (4.8%), a full shift rotation (2.4%), and afternoons [2.4%; $\chi^2(4, N = 42) = 3.96$, *ns*]. When looking at the level of facility care, extended care was the most frequently cited (42.9%), followed by intermediate care (31.0%), multilevel care (19.0%), and other [7.1%; $\chi^2(3, N = 42) = 2.87$, *ns*]. Although their job titles may suggest that they worked in acute care settings, these last three individuals indicated that they worked with seniors who have high-level geropsychiatric care needs. The work settings for these three

Table 1: Selected Socio-Demographic Characteristics

	Total $N = 42$ (100%)	Significance of Group Assignment	Control Group $n = 17$ (100%)	Intervention Group $n = 25$ (100%)
Gender				
Male	5 (11.9)	Fisher's Exact, $p = .38$, *ns*	3 (17.6)	2 (8.0)
Female	37 (88.1)		14 (82.4)	23 (92.0)
Age				
Mean	47.90		47.41	48.24
Median	49.50		48.00	53.00
Mode	54.00		42.00	54.00
SD	9.46	$\chi^2(30, N=42) = 18.76$, *ns*	9.84	9.38
Range	37 (24 – 61)		35 (25 – 60)	37 (24 – 61)
Marital Status				
Married/Common law	31 (73.8)		12 (70.6)	19 (76.0)
Separated/Divorced	5 (11.9)	$\chi^2(2, N=42) = .94$, *ns*	3 (17.6)	2 (8.0)
Never Married	6 (14.3)		2 (11.8)	4 (16.0)
Language				
English	34 (81.0)	Fisher's Exact, $p = .44$, *ns*	15 (88.2)	19 (76.0)
Other	8 (19.0)		2 (11.8)	6 (24.0)
Level of Education				
Hospital Based	7 (16.7)		3 (17.6)	4 (16.0)
Certificate/Diploma	12 (28.6)		4 (23.5)	8 (32.0)
Undergraduate Degree	17 (40.5)		8 (47.1)	9 (36.0)
Graduate Degree	5 (11.9)	$\chi^2(4, N=42) = 1.62$, *ns*	2 (11.8)	3 (12.0)
Other	1 (2.4)		--	1 (4.0)
Employment Status				
Full-time	28 (66.7)		10 (58.8)	18 (72.0)
Part-time	11 (26.2)	$\chi^2(2, N=42) = 1.22$, *ns*	5 (29.4)	6 (24.0)
Casual	3 (7.1)		2 (11.8)	1 (4.0)
Shifts Worked Most Often				
Mornings	2 (4.8)		1 (5.9)	1 (4.0)
Days	28 (66.7)		10 (58.8)	18 (72.0)
Afternoons	1 (2.4)		--	1 (4.0)
Evenings	10 (23.8)	$\chi^2(4, N=42) = 3.96$, *ns*	6 (35.3)	4 (16.0)
Full shift rotation	1 (2.4)		--	1 (4.0)
Level of Care Provided in Facility				
Intermediate	13 (31.0)		4 (23.5)	9 (36.0)
Extended	18 (42.9)		9 (52.9)	9 (36.0)
Multilevel	8 (19.0)	$\chi^2(3, N=42) = 2.87$, *ns*	2 (11.8)	6 (24.0)
Other	3 (7.1)		2 (11.8)	1 (4.0)
Total years working with elderly				
<1 year	1 (2.4)		--	1 (4.0)
1 – 9 years	11 (26.2)		7 (41.2)	4 (16.0)
10 – 19 years	18 (42.9)	$\chi^2(3, N=42) = 4.08$, *ns*	6 (35.3)	12 (48.0)
20 – 29 years	12 (28.6)		4 (23.5)	8 (32.0)

participants included extended care programs provided in a hospital setting (n = 2) and a day program located within a LTC facility (n = 1).

The majority of participants (42.9%) had spent between 10 to 19 years working with the elderly. This was followed by 20 to 29 years of experience (28.6%), 1 to 9 years of experience (26.2%), and less than one year of experience [2.4%; χ^2 (3, N = 42) = 4.08, *ns*]. None of the participants had more than 30 years of experience working with the elderly.

3.3 Identification of Key Variables

This section specifies the main dependent and independent variables mentioned in the four main hypotheses (see Section 2.5) as well as prospective covariates for this study. Following this section is a discussion of the questions and scales used to measure each variable.

3.3.1 Independent Variable

The main independent variable for this study was adult Internet-assisted instruction, as defined by assignment to either the intervention or control group.

3.3.2 Dependent Variables

For the purposes of this study, there were four major dependent variables: two primary factors; and two secondary factors. The two primary dependent variables for this study were information needs, and networking and support while the two secondary dependent variables included job satisfaction and care provision efficacy (the scales used to measure these variables are outline below in Section 3.4). Composite variables were calculated for three of the four dependent variables. The composite for information needs was derived from the addition of 16 items (individual item scores ranged from 1 to 5).

The total additive scores had a possible range of 16 to 80 in which a higher score represented a greater frequency of information needs. The composite for networking and support was derived from two separate questions, "Over the past three months, how often did you network with nurses who work outside of your facility" (1 item; range 1 to 5), and "Over the past three months, how often did you collaborate with nurses outside of your facility in order to obtain information on the topics listed below" (16 items; range 1 to 5). Possible composite scores for networking and support ranged from 17 to 85, whereby a higher score was indicative of a higher sense of networking and support. The last composite variable, job satisfaction, incorporated two questions, "On the following scale, rate how well you feel you identify with the profession of nursing" (1 item; range 1 to 10), and "Using the following scale, rate how satisfied you are with the following aspects of your job" (10 items; range 1 to 10). Possible composite scores ranged from 11 to 110, whereby a higher score indicated a higher level of job satisfaction. The last scale examined was care provision efficacy which was a single-item asking nurses to rate how well they feel they are able to provide care to their clients. Scores ranged from 1 to 10, whereby a 10 indicated a higher sense of care provision efficacy.

3.3.3 Prospective Covariates

Five covariates were tested to determine if they needed to be statistically controlled when examining the relationship among variables. The five covariates were identified as a function of their hypothesized relationship to the dependent variables according to previous studies. Specifically, years working at current place of employment, total years working with the elderly, work status, shifts worked most often, and level of care provided in the facility were examined to see if they had a significant

effect on the frequency of information needs, networking and support, job satisfaction, and care provision efficacy. If covariates were identified as having a statistically significant relationship with dependent variables then they were included in subsequent analyses.

3.4 Measurements

Data for this study was obtained from pretest and posttest questionnaires. The pretest questionnaire was nine pages in length and consisted of seven sections (see Appendix H). The questionnaire sought responses pertaining to nurses' information needs and access, information resources, care provision efficacy, networking and support, job satisfaction, Internet access, and lastly, demographic questions. In order to examine the different measures used in the questionnaire, each section will be discussed separately, along with how the scales were constructed. Since the posttest questionnaire was similar to the pretest questionnaire, a short section discussing the changes made to the posttest will follow the main discussion of the pretest questionnaire (also refer to Appendix R for the posttest questionnaire for the control group as all Online BBS questions were omitted).

3.4.1 Part A: Information Needs

The purpose of Part A: Information Needs was to assess what the information needs of nurses were over the past three months and whether they were able to have these information needs met. The scale used for both of these questions was a five-point Likert-type scale (1 = never, 2 = once every few months, 3 = at least once a month, 4 = once every few weeks, and 5 = a few times a week or more)[2]. The range of items was

[2] All references made to a five-point Likert-type scale in the measurement section are referring to this scale.

adapted from the measure used by Pearson and Small in their 1994 study that examined the perceived gerontological learning needs of RNs employed in LTC facilities. Pearson and Small (1994) used these topics to build a database on which the planning and development of inservices and courses in gerontological nursing could be based. The topics were based on certain knowledge, skills and attitudes which Pearson and Small believed were necessary to provide optimal client care (1994). Table 2 depicts the topics as they relate to the knowledge, skills and attitudes needed (Pearson & Small, 1994).

Although Pearson and Small (1994) found the topics in Table 2 to be important, only those relevant to geropsychiatry were included. Additional topics included in the questionnaire were: knowing when to refer; skin care and wound management; dealing with challenging behaviours; monitoring wandering behaviours; and infectious diseases. Inclusion of these variables was based on consultation with the GPEP educators.

Table 2: Information Needs of Nurses Working in LTC

Knowledge	Skills	Attitudes
*Drug therapy and interactions	*Managing difficult behaviours	Understanding resident's feelings
*Alzheimer's disease	*Managing conflict with relatives	More diligence in learning about caring for the aged
Ethical aspects of resuscitation	Providing palliative care	Encouraging residents to develop their abilities
Psychological assessment of the aged	*Monitoring wandering behaviour	More empathy on admission
Legal aspects of negligence	Advocating for residents	Feel more united as a healthcare team
*Depression of the aged	Encouraging participation of relatives in care	
*Physical assessment of the aged	*Communicating with relatives	
*Psychological aspects of aging	*Listening	
*Cognitive impairment	Evaluating nursing care	
*Death and Dying	Teaching NAs and RNAs	

* *Topics included in the scale.*

3.4.2 Part B: Information Resources

The second section of the questionnaire (Part B: Information Resources) was designed to ascertain how often participants accessed information resources to meet their information needs, as well as how helpful participants found the information resources. The scale used to measure the frequency of having information needs met was the standard five-point Likert-type scale described in Section 3.4.1. The second question used a 10-point directional scale with only the extreme values specified (1 = not at all helpful; and 10 = extremely helpful). The items used in question two were adapted from Rasch and Cogdill's (1999) study titled, "Nurses practitioners' information needs and information seeking: Implications for practice and education." The most frequent information resources used by nurses in the Rasch and Cogdill study (1999) were the primary supervising physician, drug reference manuals, textbooks, journal articles, other practicing nurses, other physicians, and pharmacists.

In order to make the scale more applicable to nursing in Canada, other resources were added. The additional resources included medical coordinators, health unit facility liaisons, consultation with clinical nurse specialists, consultation with health educators, consultation with mental health teams, inservices, clinical updates, and conferences. Online resources were also included to ensure that the question reflected the availability of the Internet as an important information resource. Inclusion of these items also allowed the PI to monitor how often participants used Online resources prior to, and following, the study. The Online resources specified in this measure were newsgroups/ listserves, Online BBS and Websites.

3.4.3 Part C: Care Provision Efficacy

This section was included to see if the intervention had an effect on participants' care provision efficacy which was defined as their perception of how well they were able to provide care to their clients. A 10-point Likert-type scale was used to measure this construct (1 = not at all; 10 = extremely well).

3.4.4 Part D: Networking & Support

The fourth section of the questionnaire was comprised of four questions pertaining to networking and support. The first question examined how often participants networked with other nurses working outside of their facility. Responses were provided along the standard five-point Likert-type scale employed for this questionnaire. The second question asked how often participants collaborated with nurses outside of their facility to obtain information on selected topics. These topics were the same as those listed in Part A. The standard five-point Likert-type scale was used to measure the frequency. The third question in this section looked at how often participants used different methods to network with other nurses. This was measured using the standard five-point Likert-type scale. The networking methods included professional associations, meetings, educational sessions, conferences, clinical updates, inservices, e-mailing, newgroups/listserves, newsletters and Online BBS. The final question in this section measured participants' perceived identification with the profession of nursing. A 10-point directional scale was used to measure this construct (1= not at all; 10 = extremely well).

3.4.5 Part E: Job Satisfaction

This section was comprised of two questions that examined participants' job satisfaction. The first question addressed overall level of job satisfaction and was measured using a 10-point Likert-type scale (1 = not at all satisfied; 10 = extremely satisfied). The second question asked participants to rate how satisfied they were with different aspects of their job. The same scale used in the above question was used to measure aspects of job satisfaction. The aspects of job satisfaction were taken from Slavitt et al.'s 1978 study on "Nurses' satisfaction with their work situation." Slavitt et al. (1978) designed and tested the instrument in order to determine the effectiveness of administrative changes designed to improve worker satisfaction. Although Slavitt et al. (1978) developed and tested subscales for each component of job satisfaction, just the major components were used for the purpose of this study. Components included in the measure were pay and fringe benefits, autonomy or job-related independence, task requirements, organization requirements, interaction with others (formal and informal), and job prestige. Other components that were added included job mobility, opportunities to network and engage in ongoing education, and being part of a collaborative healthcare team. These were added because of their importance as indicated in the literature in relation to nurses' perceived job satisfaction (Carr & Kazanowski, 1993; Smith et al., 1995*a*; Smith et al., 1995*b*).

3.4.6 Part F: Internet Access Questions

The section titled 'Internet Access' was comprised of thirteen different questions that examined participants' access to computers and the Internet. The first question asked participants if they currently have access to computers (0 = no; 1 = yes). The second

question examined how often participants used computers (standard five-point Likert-type scale). This was followed by a question asking participants to rate how well they felt they were able to complete five fundamental computer tasks (1 = not at all; 10 = extremely well). The five fundamental computer tasks included turning the computer on/off, using the mouse, using the keyboard, familiarity with Microsoft Windows, and using a wordprocessor (e.g., MS Word). This information was used to assess the skill level of participants within the intervention group and also ensured that the information covered in the session on *How to Use the Internet and Online Bulletin Board System* was more specific to Internet use than to general computer functions.

The subsequent questions in this section were specific to Internet use. Participants were asked whether they had access to the Internet, the location of Internet access (at home or at work), and whether they personally access the Internet. Responses to these three items were dichotomized (yes or no). In this section, participants were also asked how long they had been using the Internet, how often they used the Internet, and how often they used the Internet for various specified reasons. The reasons for use included: networking with others; networking with other healthcare professionals; finding information regarding ongoing education courses/inservice training, conferences, mental health services, and community support services; and finding online journal articles. This allowed the PI to determine the main functions of Internet usage prior to, and following, the introduction of the Online BBS. The next two questions examined one's comfort and confidence using the Internet on a 10-point scale (1 = not at all comfortable/confident; 10 = extremely comfortable/confident). The last question in this section was open-ended and asked participants what would encourage them to use the Internet more than they

currently do. This item was included to identify factors that deter Internet usage. This open-ended question was later coded into major themes.

3.4.7 Part G: Demographics

The last section of the questionnaire examined demographic variables. Participants were asked to indicate their sex (0 = male; 1 = female), conjugal status (1 = married/common-law; 2 = divorced/separated; 3 = widowed; 4 = never married), and year of birth. The next series of questions pertained to language. Participants were asked if English was their first language (yes or no), how comfortable they are speaking English (1 = not at all comfortable; 10 = very comfortable), how comfortable they are reading English (1 = not at all comfortable; 10 = very comfortable), and how comfortable they are writing in English (1 = not at all comfortable; 10 = very comfortable). This question allowed the PI to identify possible confounding variables when comparing the number of posting and responses among participants. Also included in this section were three items pertaining to education. Participants were asked to indicate the highest level of education they had completed, where they obtained their education, and their professional designation (i.e., RN, RPN, CNS). Following the educational questions, participants were asked how long they had been working in their current place of employment, and how many years in total they have been working with the elderly. These two questions allowed the PI to determine whether experience in the field of gerontology was related to participation in ongoing education.

This section was also comprised of questions pertaining to the work environment. Participants were asked about their work status, what shifts they work most often, and the level of care provided in their facility. The last two open-ended questions in this section

asked participants why they decided to partake in this study, and what they hoped to gain from using the Online BBS.

3.4.8 Additional Questions in the Posttest Questionnaire

All the above sections were included in the posttest questionnaire with the exception of the demographic questions and the questions pertaining to computer usage. Additional questions pertaining to the Online BBS were included for those in the intervention group to measure the perceived effectiveness of the Online BBS as an informal tool for information exchange (refer to Appendix Q for the posttest intervention group questionnaire).

For Part A of the posttest questionnaire (Information Needs and Access), two additional questions were included. Participants in the intervention group were asked, "Over the past three month, how well were your information needs met through the use of the Online BBS?" (1 = not at all; 10 = extremely well), and "Did you have any additional information needs, apart from the above that were met through the use of the Online BBS?" (yes or no).

Four additional questions were included in Part B (Information Resources) of the posttest intervention questionnaire. Participants were asked how they would rate the overall usefulness of the Online BBS as an information resource tool (1 = useless; 10 = extremely useful). The second question included in this section was, "Overall, how helpful did you find the information obtained from the Online BBS?" (1 = not at all helpful; 10 = extremely helpful). The third question asked participants to rate how often they used the Online BBS as an information resource tool. The last question in this section asked participants to rate how often they would continue to use the Online BBS

as an information resource. The last two questions measured frequency of use with the same standard five-point Likert-type scale used in the pretest questionnaire.

Part D (Networking and Support) of the posttest questionnaire included four additional questions. Intervention group participants were asked if participation in the study was supported by their colleagues and administrators/DOCs. Participants were also asked if they felt a sense of community while interacting with their Online BBS colleagues. This question was included to ascertain whether nurses felt a part of a greater community even though traditional forms of face-to-face communication were not employed (Bergren, 1999; Bowers, 1997; Gomez, 1998; Jaberg, 1996; Lakeman, 2000; Salvage, 1999; Tietze & Huber, 1995; Waldo, 1998; Wellman & Hampton, 1999; Wright, 1996). The last question asked participants whether they would recommend use of the Online BBS to colleagues seeking professional practice support (yes or no). This question was intended as an overall satisfaction index to determine the utility of this mode of information exchange and the possibility of use if it were expanded to include other nurses and healthcare professionals. All of these questions used a yes/no format with room for participants to justify their answers.

Lastly, additional questions were added to Part F (Internet Access Questions) of the posttest intervention group questionnaire. Most of the additional questions examined usage of the Online BBS. Participants were asked how often they logged onto the Online BBS, how often they posted messages, how often they responded to messages, and how often they read messages without responding to them. All four of these questions used the standard five-point Likert-type scale used to measure frequency of use throughout the pretest and posttest questionnaire. Participants were also asked how satisfied they were

with the overall quality of the postings/responses (1 = not at all satisfied; 10 = extremely satisfied). Participants were asked to expand on their answers in the space provided below. The last question asked participants to rate the overall usefulness of the Online BBS (1 = not at all useful; 10 = extremely useful). Although the usefulness of the Online BBS will also be determined by differences in pretest and posttest mean scores, it was felt that it was important for the participants to provide subjective ratings of the usefulness of the intervention. By examining the usefulness of the Online BBS as a means of information exchange, networking and support, it is hoped that the major strengths and downfalls of this intervention would be identified and rectified before the expansion of the Online BBS to other nurses and healthcare providers. Furthermore, it was hoped this information would provide useful information for future researchers who hope to utilize a similar intervention.

3.5 Pilot Testing the Pretest Questionnaire

Five RNs working in the Vancouver/Richmond area piloted the pretest questionnaire in order to ensure its face validity, understandability, and applicability. The pilot test was only conducted for the pretest questionnaire since the posttest questionnaire closely resembled it.

Only one of the five RNs who piloted the pretest questionnaire provided in-depth feedback. Following the pilot test, it was decided that the instructions for the questionnaires needed to be conveyed more clearly. Therefore, instructions were provided both at the beginning of the questionnaire, and after each question (i.e., please circle the most appropriate answer). The only other change made was to a series of questions that looked at the frequency of a need or task. Originally the questions were

measured using 10-point interval scales with extreme values indicating the direction of the scale. In order to increase the accuracy and answerability of the question, the scale was reduced to a five-point ordinal scale with values/labels for each point.

3.6 Data Analysis

Data from the pretest [Time 1 (T1)] and posttest [Time 2 (T2)] questionnaires were coded and entered for analysis using the Statistical Package for the Social Sciences (SPSS Inc., 1998). Once data were entered, frequencies were run to identify missing values and clean up the data. Missing data were dealt with in three ways: imputations; individual respondent interpolation; and group mean or modal substitution (Tabachnick & Fidell, 2001).

First, imputations were run since they can be applied to within or time-series analysis while retaining sampling variability (Tabachnick & Fidell, 2001). The PRELIS program was used to estimate values for missing data (Jöreskog & Sörbom, 1996). PRELIS imputes the values on the basis of like-responses as opposed to substituting mean item scores. This method is preferable to substitution with item mean values since mean substitution can obscure between-group differences (Little & Rubin, 1987). Approximately twelve percent of missing cases were substituted using this technique.

The second method involved individual respondent interpolation. Average change scores from T2-T1 were calculated for those scale values that were provided. The value was then applied within subscales relative to missing values specific to that scale. This method is used in repeated measures because it allows for consistency in the change of scores over time (Tabachnick & Fidell, 2001). Fifty-five percent of missing data were substituted using interpolations.

The third method for dealing with missing data, group mean (interval variable) or modal (ordinal variable) substitution, was used for cases where values could not be imputed or interpolated with the average change value. The group mean was used (either intervention or control means) in order to maintain group integrity. It should be mentioned that most of the missing data were a result of a measure on an additive scale being specified as 'not applicable' either because the participant fulfilled the role in question or because the resource did not occur an option within their facility or health region. Thirty-four percent of missing data were substituted for using group means or modes. Once the missing variables were accounted for and the data was cleaned up, frequencies and chi-square comparisons were computed in order to examine the Internet use characteristics.

Qualitative methods were then employed for the open-ended pretest questions in order to determine barriers to usage and reasons for participating in the study. Online BBS postings were also qualitatively analyzed in order to determine the types of information exchanged, and the themes that emerged from the postings. The overall postings were first coded according to the type of posting (i.e., original posting or response posting), and then into overall themes of the postings (i.e., client specific, political, pharmaceutical, and resource specific). This allowed the researcher to understand and focus on the posting trends made to the Online BBS over the total number of postings.

Once a general indication was formed based on whom the participants were, their access to computers/the Internet, and the dynamics of the Online BBS, total sores were calculated for the main dependent variables. General Liner Model (GLM) Repeated

Factorial Analyses were then run for each main dependent variable (Mueller, Schuessler, & Costner, 1977; SPSS Inc., 1998). Profile plots were used to depict whether the estimated marginal means were increasing or decreasing over time (T2 – T1). The sums of squares, degrees of freedom, mean squares, results *F* statistic and the significance levels were reported. The Pillai's Trace was used to report on the level of multivariate statistical significance as presupposed by the MANOVA (Lomax, 1992). This statistic was selected as it is believed to be more robust to violation of the equal cell size assumption.

The Bonferroni test, which is based on a Student's *t* statistic was used when running the GLM for repeated measures since it allows for multiple pairwise comparisons to be made, thus determining which means differ (this test adjusts for the multiple observed significance levels; Lomax, 1992; Muller et al., 1977; SPSS Inc., 1998).

In order to further comprehend the strengths and limitations of the methods used to analyze the data, it is important to understand the assumptions of the tests as well as the methods employed to address violations of these assumptions. The first assumption of the mixed GLM repeated measures design is that sample sizes need to be equal for each measure of the independent variable(s) examined (Kiess, 1996, Mueller et al., 1977; Tabachnick & Fidell, 2001). The sample, however, was unequal since there were 17 subjects in the control group and 25 in the intervention group. In order to reduce the effect of violation to this assumption, the Type III sum of squares was used as it adjusts for unbalanced models with no missing cells (SPSS INC., 1998; Tabachnick & Fidell, 2001).

Another ANOVA assumption that is often violated is sphericity. Sphericity is defined as the correlation between pairs of dependent variables across various time points. According to Tabachnick and Fidell, 2001, these should be equivalent. The sphericity assumption is often violated because measures close in time (i.e., T1 and T2) are more likely to be correlated than measures that are more distant in time (i.e., T1 and T5). In order to reduce the likelihood of violating the assumption of sphericity in a repeated measures design, the Greenhouse-Geisser and Huynh-Feldt adjustments for heterogeneity of covariance have been used. These two tests adjust for the significance of the within-subjects independent variables (Lomax, 1992; Tabachnick & Fidell, 2001) thereby reducing the likelihood of Type II errors (i.e., rejecting the null hypothesis incorrectly).

Normality, the third assumption, implies that the sampling distributions of means of various dependent variables in each cell and all linear combinations of them are normally distributed (Tabachnick & Fidell, 2001). Normality of dependent variables is assessed by examination of skewness, kurtosis and identification of univariate outliers.

Homogeneity of variance (the fourth assumption) is based on the generalization of a Monte Carlo test of robustness for T2. For unequal sample sizes, however, it is important to use a more sensitive test of homogeneity of variance. Therefore, the Box's *M* test was used as it is a notoriously sensitive test of homogeneity of variance. If Box's *M* test is significant at $p < .001$, then robustness of the MANOVA is not guaranteed (Tabachnick & Fidell, 2001).

Chapter 4: Results

Results for this study will be discussed in five major sections. First, overall frequencies for computer and Internet variables will be discussed as well as a breakdown by group (intervention group 'IG' versus control group 'CG'). This will be followed by an analysis of the open-ended questions in the pretest (intervention and control) and posttest questionnaires (intervention only). Once open-ended questions have been coded and described, a qualitative analysis of the Online BBS will be conducted. This section will examine the themes as well as posting activity made to the Online BBS. After the Online BBS activity and postings have been conducted, the four main hypotheses will be tested in turn using the GLM for Repeated Measures.

4.1 Computer and Internet Usage among Participants

This section examines the frequencies and group breakdown for computer and Internet usage among participants. The chi-square test and Fisher's exact test were used to measure the level of commonality between groups. Non-significant results (denoted as *ns*) indicate that the control and intervention groups did not differ significantly on the given computer/Internet variable.

When considering access, 95.2 percent of all participants had access to a computer (Fisher's Exact Test, $p = .16$, *ns*) and 92.9 percent to the Internet (Fisher's Exact Test, $p = .38$, *ns*) (see Table 3). As mentioned in the methods section, computer and Internet access were not necessary requirements for inclusion in the control group. As such, only 88.2 percent of those in the control group had access to a computer as compared to 100 percent in the intervention group. Furthermore, only 82.4 percent of those in the control group had access to the Internet as compared to 100 percent in the

intervention group. When considering location of access, 92.9 percent of all participants had access to the Internet at home (Fisher's Exact Test, $p = .38$, *ns*), and 57.1 percent had Internet access at work (Fisher's Exact Test, $p = .84$, *ns*). Although all participants who had access to the Internet had access at home, only 47.1 percent of those in the control group had access to the Internet at work compared to 64.0 percent of participants in the intervention group. As mentioned in the methodological limitations section, not having access at work may have been a major deterrent to participating on the Online BBS. Of those participants who had access to the Internet, only one person in the control group did not use it (Fisher's Exact Test, $p = .14$, *ns*).

Another feature of interest is years of experience using the Internet [$\chi^2 (4, N = 39) = 1.64$, *ns*]. In total, the majority of participants had been using the Internet for four years or more ($n = 20$; 47.6%), followed by 1 to 3 years of experience ($n = 10$; 23.8%), 6 to 12 months of experience ($n = 7$; 16.7%) and less than 6 months of experience ($n = 2$; 4.8%). When considering years of experience by group, 35.3 percent of control group participants had four or more years of experience as compared to 56.0 percent of those in the intervention group. Twenty-nine percent of those in the control group had one to three years experience as compared to 20.0 percent in the intervention group. This was followed by 6 to 12 months of experience (CG = 11.8%; IG = 20.0%) and less than six months of experience (CG = 5.9%; IG = 4.0%). Although fewer years of experience using the Internet was assumed to be a deterrent for participating in the study, it is evident that even those participants with less than a year of experience used and participated on the Online BBS ($n = 5$).

Table 3: Frequency of Computer and Internet Usage

Variable	Total N = 42 (%)	Significance of Group Assignment	Control Group n = 17 (%)	Intervention Group n = 25 (%)
Computer Access	40 (95.2)	Fisher's Exact, $p = .16$, *ns*	15 (88.2)	25 (100.0)
Frequency of Computer Use				
Once every few months	1 (2.4)		1 (5.9)	--
At least once a month	2 (4.8)		2 (11.8)	--
Once every few weeks	5 (11.9)	$\chi^2 (3, N = 39) = 6.84$, *ns*	2 (11.8)	3 (12.0)
A few times a week or more	31 (73.8)		9 (52.9)	22 (88.0)
Internet Access	39 (92.9)	Fisher's Exact, $p = .38$, *ns*	14 (82.4)	25 (100.0)
Home	39 (92.9)	Fisher's Exact, $p = .38$, *ns*	14 (82.4)	25 (100.0)
Work	24 (57.1)	Fisher's Exact, $p = .84$, *ns*	8 (47.1)	16 (64.0)
Internet Use	38 (90.5)	Fisher's Exact, $p = .14$, *ns*	13 (76.5)	25 (100.0)
Years of Experience				
< 6 months	2 (4.8)		1 (5.9)	1 (4.0)
6 – 12 months	7 (16.7)		2 (11.8)	5 (20.0)
1 – 3 years	10 (23.8)		5 (29.4)	5 (20.0)
4 – 6 years	12 (28.6)	$\chi^2 (4, N = 39) = 1.64$, *ns*	4 (23.5)	8 (32.0)
> 6 years	8 (19.0)		2 (11.8)	6 (24.0)
Frequency of Internet Use				
Once every few months	2 (4.8)		2 (11.8)	--
At least once a month	4 (9.5)		1 (5.9)	3 (12.0)
Once every few weeks	4 (9.5)	$\chi^2 (3, N = 39) = 4.56$, *ns*	1 (5.9)	3 (12.0)
A few times a week or more	29 (69.0)		10 (58.8)	19 (76.0)
Comfort using the Internet				
Mean	7.38		6.43	7.92
Median	8.00		7.00	8.00
Mode	10.00	$\chi^2 (9, N = 39) = 15.33$, *ns*	7.00	10.00
SD	2.42		2.62	2.18
Confidence using the Internet				
Mean	6.97		5.86	7.60
Median	8.00		5.00	8.00
Mode	10.00	$\chi^2 (9, N = 39) = 12.79$, *ns*	5.00	10.00
SD	2.61		2.45	2.53

A stronger determining factor for participating in the study and using the Online BBS was frequency of Internet use [$\chi^2 (3, N = 39) = 4.56$, *ns*]. In total, 69.0 percent of the participants used the Internet a few times a week or more as compared to 9.5 percent who used it once every few weeks, 9.5 percent who used it at least once a month, and 4.8

percent who used it once every few months. Approximately fifty-nine percent of those in the control group used the Internet a few times a week or more, 12.0 percent used it at least once every few months, 5.9 percent used it once every few weeks, and 5.9 percent used it at least once a month. In contrast, 76.0 percent of those in the intervention group used the Internet a few times a week or more compared to once every few weeks (12.0%), and at least once a month (12.0%).

Comfort and confidence using the Internet was the final Internet-related factor examined. It is evident that overall, participants were more comfortable [$M = 7.38$, $SD = 2.42$; χ^2 (9, $N = 39$) = 15.33, *ns*] than confident with using the Internet [$M = 6.97$, $SD = 2.61$; χ^2 (9, $N = 39$) = 12.79, *ns*]. The breakdown of participants shows that, overall, those in the control group were less comfortable ($M = 6.43$, $SD = 2.62$) and confident ($M = 5.86$, $SD = 2.45$) with using the Internet than those in the intervention group ($M = 7.92$, $SD = 2.18$; $M = 7.60$, $SD = 2.53$ respectively).

4.2 Analysis of Open-ended Pretest Questions

The pretest questionnaire examined three important open-ended questions that may be helpful in understanding what factors would encourage RNs working in LTC facilities to use the Online BBS more than they currently do, their motivations for joining the study, and what they hoped to gain from using the Online BBS.

When looking at the incentives for increasing Internet use, only 37 participants provided responses (88.1%). Thirty-eight (CG $n = 6$; IG $n = 10$) of the responses given were related to needing more time and 28.6 percent stated that more education about how to effectively use the Internet and find information were needed (CG $n = 8$; IG $n = 4$). Other incentives included increased access to up-to-date professional resources/clinical

updates (11.9%; CG n = 2, IG n = 3), and more task-specific searches (11.9%; CG n = 3, IG n = 2). Less frequent incentives included increased access at work (7.1%; CG n = 0, IG n = 3), having more colleagues who are interested in sharing information (7.1%; CG n = 0, IG n = 3), and more professional sites that do not require membership fees and registration (CG n = 1; IG n = 1). Approximately 9.5 percent felt that nothing would improve their frequency of Internet use as they already use the Internet daily (CG n = 0; IG n = 4).

Participants were asked why they chose to take part in this study, and all provided explanations (IG n = 25, CG n = 17). Six themes emerged from this qualitative analysis. The main reason for participation was that they felt the research was valuable and the service was needed (45.2%; IG n = 13, CG n = 6). Secondly, nurses wanted to increase their knowledge about geropsychiatry and gain easier access to information (23.8%; IG n = 8, CG n = 2). Less frequently reported themes included the learning opportunity and continuing education value (21.4%; IG n = 4, CG n = 5), being asked to (21.4%; IG n = 2, CG n = 7), the opportunity to network with colleagues (11.9%; IG n = 3, CG n = 2), and developing/enhancing Internet skills (7.1%; IG n = 2, CG n = 1).

Lastly, participants were asked what they hoped to gain from the study (98% provided responses). Four themes emerged from the responses to this question. First, participants stated that they were looking to increase their knowledge by having access to problem specific information and easy-to-access information (78.6%; IG n = 20, CG n = 13). This was followed by a desire to interact with and/or network with other nurses online (38.1%; IG n = 9, CG n = 7). Ten percent of the participants stated that they wanted to improve their Internet skills and increase their confidence with interacting

online (9.5%; IG $n = 2$, CG $n = 2$). Lastly, one participant in the intervention group stated that they were not sure what they hoped to gain from using the Online BBS.

4.3 Analysis of Online BBS Questions

Participants in the intervention group were asked to respond to more subjective questions about their Online BBS use and experience. When asked how useful they would rate the Online BBS as an information resource, 40 percent gave a moderate rating (5 to 7), 32 percent gave high rating (8 to 10), and 28 percent gave a low rating (1 to 4). Overall, the mean score was 6.25 ($SD = 2.56$). When asked how helpful they found the information obtained from the Online BBS, most respondents gave a moderate rating between 5 to 7 (44.0%) followed by those who gave a low rating (1 to 4; 36.0%) and those who gave a high rating (8 to 10; 20.0%). Overall, the mean score for the helpfulness of information found on the Online BBS was 5.52 ($SD = 2.24$).

When asked whether they felt a sense of community while interacting with their Online BBS colleagues, 68.0 percent responded in the affirmative. For those eight participants who said they did not feel a sense of community only three provided explanations as to why. Two participants felt that there was not much sharing of information and the Online BBS was underutilized, and the other participant felt that it was hard to feel connected when they did not know anything about where the users were from or their background in nursing.

Based on their online experience, participants were asked whether or not they would recommend using the Online BBS to colleagues who are looking for professional practice support. Ninety-two percent stated that they would recommend using the Online BBS, whereas two participants said they would not recommend the Online BBS to their

colleagues. The first participant stated that the Online BBS did not seem fast enough (i.e., speed of response to posted questions) and the other said that she needed to use it more before a recommendation could be made.

Participants were also asked to rate how often they accessed the Online BBS, posted messages, responded to messages and read messages without responding to them. The majority of participants stated that they logged on to the Online BBS once every few weeks (n = 8; 32%) to once every few days (n = 8; 32%). Twenty-four percent of participants indicated that they logged on once every few months, and the remaining 12 percent logged on at least once a month.

When considering the frequency of posting original messages, 40 percent stated that the never posted messages and 28 percent posted messages once every few months. Only eight participants posted messages at least once a month or more. Sixteen percent posted original messages at least once a month, eight percent posted once every few weeks, and the remaining eight percent posted messages a few times a week or more. The next question looked at how often participants responded to a message. Thirty-six percent never responded to messages, while 40 percent responded once every few months or more. In total, 19 participants responded to messages at least once a month. Twelve percent responded at least once a month, eight percent responded once every few weeks, and four percent responded to messages a few times a week or more. The last question asked participants how often they read postings without responding to them. Only one participant stated never (this participant always responded to postings when on the Online BBS). Twenty-eight percent read messages without responding to them once every few weeks (n = 7), or a few times a week or more (n =7), while 20 percent read postings

without responding to them once every few months (n = 5) and at least once a month (n = 5).

Table 4: Frequency of Online BBS Use

	Never	Once every few months	At least once a month	Once every few weeks	A few times a week or more
How often did you log on to the Online BBS?	--	6 (24.0)	3 (12.0)	8 (32.0)	8 (32.0)
How often did you post messages?	10 (40.0)	7 (28.0)	4 (16.0)	2 (8.0)	2 (8.0)
How often did you respond to messages?	9 (36.0)	10 (40.0)	3 (12.0)	2 (8.0)	1 (4.0)
How often did you read postings without responding to them?	1 (4.0)	5 (20.0)	5 (20.0)	7 (28.0)	7 (28.0)

Participants were also asked to rate how satisfied they were with the overall quality of the postings/responses made to the Online BBS. Fifty-two percent of participants gave a moderate rating (5 to 7), 24 percent gave a low rating (between 1 to 4), and 20 percent gave a high rating (between 8 to 10) suggesting that they were satisfied to extremely satisfied with the overall quality of the postings/responses made to the Online BBS. The overall mean score was 5.71 (SD = 2.27).

The quality of the Online BBS received a low to moderate rating because many of participants felt that the answers to questions were too brief/opinionated, and that most responses were just the beginning of a complete answer (n = 6). Others felt that the information posted to the Online BBS was irrelevant as it tended to focus more on cutbacks to healthcare rather than focus specifically on geropsychiatric issues (n = 3). It should be noted, however, that other participants felt it was important to post messages related to the nursing cutbacks. As one respondent stated, "Although I felt guilty about

bringing up issues other than geropsychiatry, it actually felt good to communicate with others about current information."

Lastly, participants were asked to rate the overall usefulness of the Online BBS. The majority of participants gave a satisfactory rating (5 to 7; 36.0%) to an extremely satisfactory rating (8 to 10; 32.0%). Thirty-two percent of participants also gave a low rating (1 to 4) indicating overall dissatisfaction with the usefulness of the Online BBS. The overall mean score was 6.04 (SD = 2.61). Only 58.3 percent of intervention group participants provided explanations for their ratings. Furthermore, three of the participants who gave a low to moderate rating of the overall usefulness of the Online BBS provided further explanation for their rating. The first participant stated that the postings and responses were too simplistic, the second stated that the Online BBS is only as useful as the quality of information provided in the postings, and the last felt that the Online BBS would be more useful once they got use to using it. Eight intervention group respondents provided explanations for their high ratings. Two participants felt that this was a good avenue for networking, venting, and education. One participant stated that it is a valuable resource, especially at a time of uncertainty and change. Another participant stated the benefit of having a national perspective. The focus on geropsychiatry actually motivated one participant to look up information which otherwise she would not have done. The fact that the Online BBS could be accessed at anytime was a relief to one participant who was feeling time constraints due to a heavy workload. Although two of the participants gave the Online BBS an overall high rating, they felt that improvements could still be made with the participation of more nurses and by having a moderator who would

oversee that all postings were responded to in full and who could offer additional resource suggestions.

4.4 Analysis of Online BBS Postings

In total, 57 postings were made to the Online BBS; 21 original postings and 36 reply postings. It should be noted that one of the original postings was a repeat posting, and three of the original postings had no response postings. Only 17 of the participants engaged in posting messages indicating that the main activity by the other eight participants was through reading posted messages. The total number of times participants logged on to the Online BBS (will now be referred to as number of 'hits') was 1,094. On average, each posting was read 19.2 times over the four-and-a-half month duration of the study. In order to understand more about the posting activity, it is important to examine the breakdown of postings by month (Table 5), day of week (Table 6), and time of day (Table 7).

Table 5: Postings by Month

Month	Number	Percentage
Month 1 (January)	28	49.1
Month 2 (February)	7	12.3
Month 3 (March)	8	14.0
Month 4 (April)	13	22.8
Month 5 (May)	1	1.8

When constructing a profile of the postings, the majority were made in January (n = 28; 49.1%), followed by April (n = 12; 22.8%), March (n = 8; 14.0%), February (n = 7; 12.3%), and May (n = 1; 1.8%). The resurgence of activity in April may be a direct result of the reminder letter that was mailed to participants on March 13, 2002. The purpose of the letter was to reiterate how to log onto the Online BBS, as well as restate the participant's user name and password.

Table 6: Postings by Day of Week

Day of Week	Number	Percentage
Sunday	6	10.5
Monday	7	12.3
Tuesday	8	14.0
Wednesday	10	17.5
Thursday	13	22.8
Friday	6	10.5
Saturday	7	12.3

Most of the postings were made towards the end of the week on a Thursday (n = 13; 22.8%). Much activity also occurred on Wednesday's (n = 10; 17.5%), Tuesday's (n = 8; 14.0%), Monday's (n = 7; 12.3%), and Saturday's (n = 7; 12.3%). The least active days of the week were Sunday's and Friday's (n = 6; 10.5%), meaning that nurses are less likely to participate on weekends.

Table 7: Postings by Time of Day

Time of Day	Number	Percentage
6:00 - 8:59 am	10	17.5
9:00 - 11:59am	7	12.3
12:00 - 2:59pm	6	10.5
3:00 - 5:59pm	12	21.1
6:00 - 8:59pm	6	10.5
9:00 - 11:59 pm	16	28.1

The most active time of day for making postings was in the evening between 9:00 and 11:59 pm (n = 16; 28.1%). The other most frequent time of day for posting messages were in the late afternoon between 3:00 and 5:59 pm (n = 12; 21.1%) and in the early morning between 6:00 and 8:59 am (n = 10; 17.5%). The least frequent time for posting messages were between 9:00 and 11:59 am (n = 7; 12.3%), 12:00 and 2:59 pm (n = 6; 10.5%), and 6:00 and 8:59 pm (n = 6; 10.5%). It should be noted that while all postings were in Pacific Time (PT), there may have been a potential time zone confound as those

in Eastern provinces were less likely to use the Online BBS from 9:00 to 11:59 pm but more likely to use it from 6:00 to 8:69 am and 3:00 to 5:59 pm PT.

Although much information can be derived from looking at the when postings were made, it is equally important to conduct a qualitative analysis of the postings. Table 8 gives a breakdown of the overall themes of the Online BBS postings. Each theme is broken down according to posting title and the number of original postings and response postings for each posting title.

In total, 11 themes emerged from the data. The theme with the most postings pertained to budget cuts (n = 12). Postings regarding budget cuts dealt with three major topics: creating solutions to the cuts (n = 4); methods for keeping up staff morale (n = 3); and the strained healthcare system (n = 5). With regard to the strained healthcare system, many of the participants discussed how the uncertain future of the healthcare system made it difficult to focus on this study. The second theme to emerge pertained to staffing issues. This theme elicited ten postings and two major topics. The first topic discussed how to deal with negative comments about a colleague's work performance (n = 2). The second topic, which resulted in a lot more dialogue, pertained to the relative advantages and disadvantages of permanent assignment between staff and residents (n = 8). The third theme, medications, resulted in a total of nine postings. The major topics of discussion included polypharmacy (n = 3), Digoxin and pulse rates (n = 2), Seraquel (n = 1), and drugs for Parkinson's disease (n = 3). Sleeping behaviours was the four major theme to emerge (n = 8). Topics discussed included non-restraint policies for sleeping and the use of bed rails (n = 6), and reducing restlessness due to Congestive Heart Failure at night (n = 2). The fifth theme to emerge with a total of five postings was managing

Table 8: Breakdown of Online BBS Posting Themes

Themes	Postings Titles	Number of Original Postings	Number of Responses
Medications	Polypharmacy	1	2
	Digoxin/pulse	1	1
	Seraquel	1	0
	Drugs for Parkinson's	1	2
	Total Postings = 9	**4**	**5**
Budget Cuts	Cuts to LTC budget: creative solutions	1	3
	Budget cuts: keeping up morale	1	2
	Strained HC system: hard to focus	1	4
	Total Postings = 12	**3**	**9**
Eden Alternative	Successfulness of Eden Alternative	1	2
	Total Postings = 3	**1**	**2**
Bathing	Bathing demented patients	2	2
	Total Postings = 4	**2**	**2**
Managing Difficult Behaviours	Strategies for difficult behaviours	1	0
	Paranoid behaviour in residents with Parkinson's	1	1
	Personality disorders	1	1
	Total Postings = 5	**3**	**2**
Staffing Issues	Colleagues interaction with residents	1	1
	Permanent assignment of residents: pro's & con's	1	7
	Total Postings = 10	**2**	**8**
Care Plans	Care plans/licensing	1	0
	Total Postings = 1	**1**	
Wound Management	Hygiene for deformed arthritic hands	1	1
	Total Postings = 2	**1**	**1**
Controversial Care Techniques	ECT for severely demented	1	2
	Total Postings = 3	**1**	**2**
Sleeping Behaviours	Non-restraint policies for night (bed rails)	1	4
	Reducing restlessness in CHF at night	1	1
	Total Postings = 7	**2**	**5**
Other	Introduction to Online BBS	1	0
	Total Postings = 1	**1**	

difficult behaviours. The topics discussed included strategies for dealing with 'challenging' behaviours, especially accusations of theft by staff (n = 1), how to reduce paranoia in residents with Parkinson's (n = 2), and personality disorders and whether they are inherited or learned (n = 2). Bathing was the sixth theme to emerge (n = 4). The main topic of discussion included how to reduce agitation when bathing those with dementia (n = 4). Two themes elicited three postings each: the Eden Alternative philosophy and questionable care techniques. The first theme explored the successfulness of using the Eden Alternative philosophy in LTC (n = 3), and the second posting explored the ethics of using Electro Convulsive Therapy (ECT) for the treatment of those who are severely demented. Wound management was the eighth theme to emerge (n = 3). These three postings looked at ways to maintain hygiene for those with deformed arthritic hands. The last two themes only had one posting each. The first looked at care plans and whether activities of ADL, like hygiene, mobility and toileting require care planning. The last posting was made by the PI to introduce the Online BBS.

4.5 Summary

Overall, the computer and Internet use frequencies and bivariate statistics showed no statistically significant differences between treatment and control groups. Therefore, the groups did not differ significantly from each other on main computer and Internet variables. Since group assignment was not random, it was important to establish group equivalency to reduce the chances of introducing additional confounds when testing the hypotheses.

To discern why people joined the study and what they hoped to gain from the study, two open-ended questions were asked. First, nurses were asked, "Why did you

decide to take part in this study?" In general, participants took part because it was seen as a valuable/needed service, it would help to increase their geropscyhiatric knowledge, seen as having learning opportunity and continuing education value, being asked to, having a chance to network, and provide the ability to develop their Internet skills. Second, nurses were asked, "What do you hope to gain from using the Online BBS?" These reasons were closely reflected in what they hoped to gain: knowledge; access to problem-specific information; a chance to network; and online confidence and Internet skills. Lastly, all participants were asked what conditions would increase their use of the Internet. This was asked in order to understand the potential barriers to participation. Seven incentives to increasing Internet usage emerged: having more time and more education regarding effective use; increased access to professional up-dates; increased task-specific searches; increased access at work; improved and increased information sharing among colleagues; and a decrease in professional membership fees.

When considering Online BBS use, 72 percent rated the Online BBS as being a moderately to highly useful information resource, whereas 80 percent rated the information obtained from the Online BBS as being somewhat to not very useful. Furthermore, only 68 percent of users reported feeling a sense of community as a result of using the Online BBS. Although the Online BBS did receive some criticism, 92 percent of participants stated that they would recommend using the Online BBS to their nursing colleagues. Lastly, 72 percent of users were moderately to highly satisfied with the overall quality of the Online BBS, as well as the overall usefulness of the Online BBS.

When examining the postings made to the Online BBS, a total of 57 postings were made – 21 original postings, and 36 reply postings. Overall, only 17 participants made postings to the site (either original or response postings) while eight participants just read the postings. Although participation was relatively low, those who actively participated on the Online BBS used it quite frequently.

In total, 12 themes emerged from the qualitative analysis of the postings. The major themes pertained to medications, budget cuts, Eden Alternative philosophy, bathing, managing difficult behaviours, staffing issues, care plans, wound management, controversial care techniques, sleep behaviours, and other. The majority or original postings made to each section ranged from one to four with the average being 1.75. The number of responses made to each posting ranged from zero to nine with the average being three.

4.6 GLM Repeated Measures Analysis

The GLM is used to analyze variance among one continuous interval or ratio dependent variable and one or more independent variables. The model is general in that the kind of independent variable is not specified (i.e., can be continuous or categorical; Vogt, 1993). GLM analyses can be used to test both balanced and unbalanced models. For this study, analyses were conducted using an unbalanced model (i.e., 17 controls versus 25 intervention participants), while it was retested using a balanced model (i.e., 17 controls versus 17 active Online BBS users) in order to assess the potential effect of the MANOVA assumption of equal cell sizes (SPSS Inc., 1998). Type III sum of squares were computed for each unbalanced model in order to adjust for unequal sample sizes

with no missing cells. Lastly, the Pillai's criterion, a more robust index of multivariate significance for unequal cell sizes, was reported for the unbalanced models.

The GLM examines the homogeneity of the variance and covariance structure of the dependent variables by means of the Levene and Box's *M* tests. In addition, it computes the Bartlett's sphericity test of the residual covariance matrix in the case of a multivariate model, and Mauchly's sphericity test of the residual covariance matrix in the case of a repeated measures model (SPSS Inc., 1998).

GLM analyses were applied to test hypotheses specific to the use of the Online BBS (assignment to treatment/control measure) in relation to the frequency of nurses' information needs (continuous measure), networking and support (continuous measure), job satisfaction (continuous measure) and perceived care provision efficacy (continuous measure) by group (between subject measure) over time (within subject measure).

Results for each of the four main hypotheses are reported based on the findings from the GLM repeated measures analysis. First, changes in the mean scores over time are reported to establish whether change was observed in the hypothesized direction for both groups. Repeated measures multivariate analyses of variance were conducted for each hypothesis in order to establish whether there was a main effect for 'Time' or 'Group,' and/or an interaction effect between the two. Findings were considered as to whether the hypotheses were supported or rejected.

Before the results of each of the four hypotheses are reported, it is first prudent to consider MANOVA assumptions such as the univiariate normality of dependent variables by means of descriptive statistics and examination of the distribution of scores. Multivariate outliers were then considered through the examination of Mahalanobis

distance. Once these MANOVA assumptions had been addressed, consideration of confounding variables were then described in relation to whether or not they needed to be controlled in the overall repeated-measure MANOVA models. Following this, each of the four hypotheses were tested through the GLM for repeated measures. Lastly, methodological limitations were considered through the computation of the Durbin-Watson statistic of autocorrelation, and a re-computation of the results for the 17 control group participants versus the 17 active Online BBS users. This re-computation was conducted to ascertain if suppression of between-group differences occurred as a result of minimal participation by certain participants in the intervention condition.

4.6.1 Consideration of MANOVA Assumptions

Table 9 provides a summary of the statistics computed for each dependent variable. Overall, the variables used to test the four hypotheses were normally distributed as determined by the standard deviation, skewness and kurtosis scores (within normal parameters). Furthermore, the Chronbach alpha for each composite variable scale was above .90, supporting the internal consistency of composite variables. When considering the distribution of scores on each of the four dependent variables, no univariate outliers were found (e.g., no values were more than three standard deviations above or below the mean).

Table 9: Descriptive Statistics for Composite Variables at T1 & T2

	Range	*M*	*SD*	Skewness	Kurtosis	Alpha
TIME 1						
Information needs	61	48.12	13.19	.24	-.17	.92
Networking & Support	47	31.18	11.96	.80	.23	.94
Job Satisfaction	88	72.39	21.59	-.42	-.50	.93
Care Provision Efficacy	6	7.62	1.31	-.96	.68	--
TIME 2						
Information needs	63	48.32	16.47	-.33	-.43	.95
Networking & Support	55	34.21	14.67	.67	-.33	.96
Job Satisfaction	95	72.89	24.51	-.61	-.29	.95
Care Provision Efficacy	6	7.65	1.41	-.66	.04	--

Reliability tests were then run for each of the three composite variables to determine the contribution of individual items to all others in the variable. As seen in Table 10, all items for the composite information needs variable contributed to the overall internal consistency of the score. Thus, all items included in the scale were considered to be consistently answered. The average item-total correlation was .62 (ranged from .48 to .78), an acceptable level (i.e., in excess of .30) further reflecting the internal consistency of responses across the 16 selected items. Further, as indicated by the squared multiple correlation values (SMC), items contributed meaningfully to the measurement of the scale totals (average SMC = .69, ranged from .49 to .82) as each exceeded a value of .50. Lastly, the average change to the alpha if the item was deleted was only .05 (ranged between .91 and .92), indicating that all items were roughly equivalent in terms of internal consistency.

Table 10: Item-Total Statistics for Information Needs

Item	Corrected Item-Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
PA1_A	.48	.56	.92
PA1_B	.67	.73	.92
PA1_C	.67	.77	.92
PA1_D	.68	.76	.92
PA1_E	.49	.51	.92
PA1_F	.76	.80	.91
PA1_G	.78	.82	.91
PA1_H	.73	.81	.91
PA1_I	.61	.75	.92
PA1_J	.59	.60	.92
PA1_K	.55	.49	.92
PA1_L	.43	.65	.92
PA1_M	.65	.70	.92
PA1_N	.53	.69	.92
PA1_O	.67	.73	.92
PA1_P	.67	.74	.92

Item-total statistics were also calculated for the networking and support composite variable. As seen in Table 11, all of the items contributed to overall measurement. The average corrected item-total correlation was .68 (ranged from .48 to .78), an acceptable level reflecting the consistency in responses to the 17 selected items. As indicated by the SMC values, all 17 items contributed meaningfully to the measurement of the scale totals (average SMC = .81, ranged from .50 to .94). Lastly, average change made to the alpha if the item was deleted was only .01 (ranged between .93 and .94) indicating that all items were roughly equivalent in terms of their contribution to overall scale internal consistency.

Table 11: Item-Total Statistics for Networking & Support

Item	Corrected Item-Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
PD1	.54	.58	.94
PD2_A	.70	.84	.93
PD2_B	.76	.84	.93
PD2_C	.63	.76	.94
PD2_D	.70	.82	.93
PD2_E	.54	.50	.94
PD2_F	.61	.69	.94
PD2_G	.78	.94	.93
PD2_H	.78	.94	.93
PD2_I	.68	.81	.94
PD2_J	.80	.93	.93
PD2_K	.83	.94	.93
PD2_L	.69	.75	.94
PD2_M	.74	.88	.93
PD2_N	.35	.70	.94
PD2_O	.77	.89	.93
PD2_P	.62	.88	.94

Lastly, item correlations were calculated for the job satisfaction composite variable. As depicted in Table 12, all but one of the items contributed to the overall internal consistency of the score. The average corrected item-total correlation was .72 (ranged from .19 to .85), and the average SMC was .76 (ranged fro .35 to .93). Lastly, the average change to the alpha if items were deleted was only .01 (ranged between .92 and .95). While the one item (PE2_A) did not appear to be highly correlated with the others, it remained in the analysis because of its theoretical relevance and its previously justified internal consistency (Slavitt et al., 1978). It should be noted, however, that if future studies are to use a similar measure then the wording might be changed to more clearly convey what is meant by satisfaction with pay and fringe benefits.

Table 12: Item-Total Statistics for Job Satisfaction

Item	Corrected Item-Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
PE1	.77	.76	.93
PE2_A	.19	.35	.95
PE2_B	.79	.80	.93
PE2_C	.72	.90	.93
PE2_D	.83	.94	.92
PE2_E	.76	.83	.93
PE2_F	.85	.77	.92
PE2_G	.68	.66	.93
PE2_H	.84	.85	.92
PE2_I	.70	.76	.93
PE2_J	.81	.73	.92

The third consideration of MANOVA assumptions, multivariate outliers, was examined by means of Mahalanobis' distance. The Mahalanobis distance, a measure of multivariate normality, was calculated based on how much a case's values on the variables differed from the average of all cases (SPSS, 1998). A large Mahalanobis distance (relative to the number of independent variables) signifies a case as having extreme values on two or more variables (SPSS, 1998). In general, the Mahalanobis distance is compared against the critical value of the chi-squared distribution for the number of variables involved. The Mahalanobis distance should, therefore, not exceed the χ^2 value of 15.5 at an alpha level of .05 and eight degrees of freedom (Pickering, 2002; Tabachnick & Fidell, 2001). In total, no cases exceeded 15.5 and as such no multivariate outliers were detected (values ranged from 1.14 to 15.49).

T-tests were run for all four dependent variables at T1 to assure that groups did not differ significantly as a function of group assignment.[3] The values for information

[3] Non-group differences for demographic variables were previously established in Section 3.2.4 through χ^2 values.

needs (t = -.32, *ns*), networking and support (t = 1.84, *ns*), job satisfaction (t = 1.419, *ns*), and care provision efficacy (t = -1.73, *ns*) did not statistically differ. Overall, these results suggest that there were no between-group differences as a function of group assignment to conditions. Therefore, assignment to groups did not introduce a confound when considering the following analyses.

4.6.2 Consideration of Confounding Variables

Prior research has suggested that various factors are associated with the dependent variables examined in this study. Specifically, years working at current place of employment, total years working with the elderly, work status, shifts worked most often, and level of facility care provided have been found to be associated with the frequency of information needs, networking and support, job satisfaction, and care provision efficacy. The potential covariates were examined relative to the four dependent variables in order to determine if they were significantly associated, and thus needed to be controlled for in the GLM repeated measures analyses. The overall model for information needs with the inclusion of the five potential covarites was non-statistically significant [F (34) = 2.202, p = .140, *ns*] nor was the model for networking and support [F (34) = .716, p = .761, *ns*], job satisfaction [F (34) = .505, p = .913, *ns*], and care provision efficacy [F (34) = .491, p = .921, *ns*]. As a result, none of the potential covariates were included when running the GLM for repeated measures as significant associations among the prospective confounding variables and dependent variables were not found.

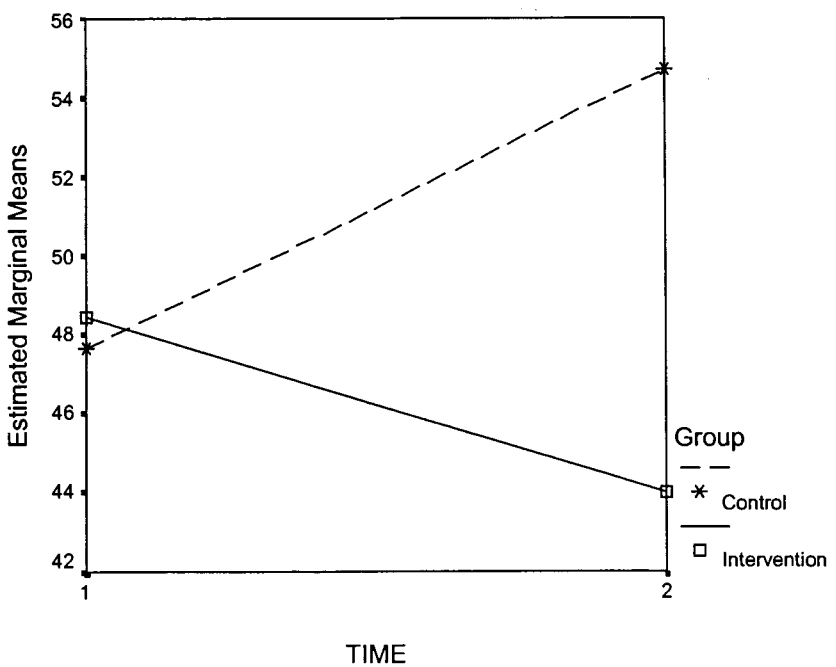
4.6.3 GLM Repeated Measures Analysis for Information Needs

Hypothesis 1: Adult Internet-assisted instruction through the use of an Online BBS will reduce nurses' information needs.

The measure for information needs was created by asking participants how often they needed information on 16 geropsychiatric related topics. It was hypothesized that the information need scores for those in the intervention group would decrease over time as a function of their needs being met through the Online BBS.

As seen in Figure 2, intervention and control groups' pretest information need scores were virtually indistinguishable at T1 (IG T1 = 48.44; CG T1= 47.65, respectively). As hypothesized, the control group's information need scores increased from T1 to T2 (T2 = 54.71; a mean difference of +7.06, *SE* = 4.17), while the intervention group's information need scores decreased over time (T2 = 43.98; a mean difference of -4.46, *SE* = 3.44).

Figure 2: Information Needs over Time



A repeated measures analysis of the main effects for both independent variables (TIME = T1-T2; GROUP) were non-significant (see Table 13). The interaction effect, however, attained statistical significance, $F(1, 40) = 4.55, p<.05, \eta^2 = .10$ (Pillai's trace = .10) suggesting that the Online BBS had a positive effect on reducing the frequency of information needs over time when considered vis-à-vis change observed among control group participants. When considering the homogeneity of variance, the results were satisfactory [Box's M $F(3, 65945) = .33, p<.05$] supporting the robustness of the homogeneity of variance.

Table 13: Information Needs MANOVA

Source	Type III *SS*	*df*	*MS*	*F**
TIME	34.17	1	34.17	.23
GROUP	499.19	1	499.19	1.79
TIMExGROUP	671.31	1	671.31	4.55*
ERROR	5898.04	40	147.45	

*$p<.05$

Overall, the hypothesis that the Online BBS will have a significant positive effect on nurses' information needs was supported. As seen in the above analysis, the frequency of information needs decreased for those in the intervention group, while it increased for those in the control group. Thus, the Online BBS was seen as moderating the reduction of the frequency of information needs over time for those in the intervention group relative to control participants.

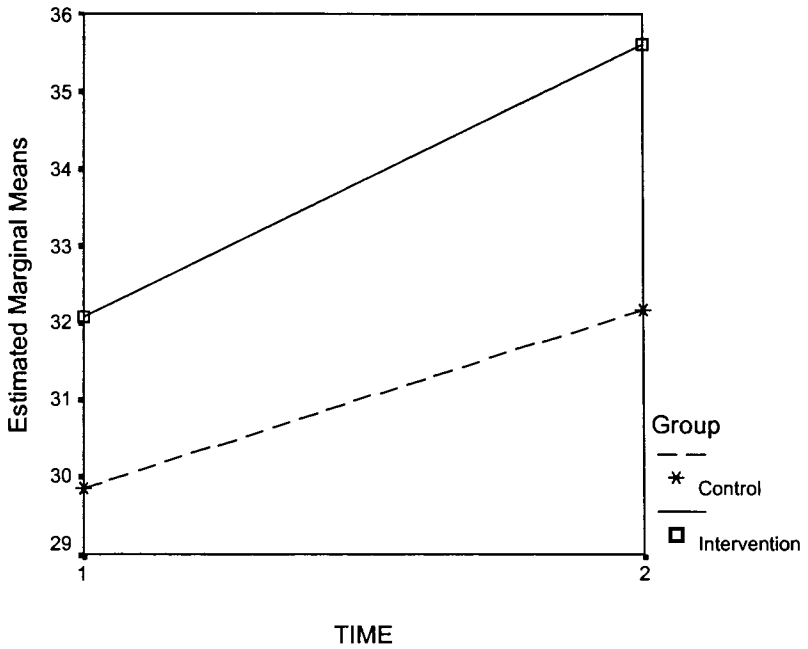
4.6.4 GLM Repeated Measures Analysis for Networking & Support

Hypothesis 2: Adult Internet-assisted instruction through the use of an Online BBS will positively affect nurses' degree of networking and support.

To measure a change in networking and support over time, two separate measures were combined to form a composite networking and support variable. First, participants were asked "Over the past three months, how often did you network with nurses who work outside of your facility?" Secondly, participants were asked to rate how often they collaborated with nurses outside of their facility in order to obtain information on a list of 16 topics. When considering the frequency of networking and support scores, it was hypothesized that nurses in the intervention group would experience a significant increase as a function of using the Online BBS.

As depicted in Figure 3, both the intervention and control groups' networking and support scores increased over time. While it was hypothesized that the intervention group's scores would increase as a result of using the Online BBS (IG T1 = 32.08, IG T2 = 35.60; mean difference = +3.52, *SE* = 2.55), it was not hypothesized that the control group scores would (CG T1 = 29.86, CG T2 = 32.18; mean difference = +2.31, *SE* = 3.10). Rather, it was hypothesized that the control group participants networking and support needs would remain unchanged or decline over time. Reasons for the unexpected increase by those in the control group will be further discussed in Section 5.2.2.

Figure 3: Networking & Support over Time



A repeated measures multivariate analysis of variance revealed that main effects for 'Time' and 'Group' were non-significant (see Table 14), as was the interaction effect. When considering the homogeneity of variance, the results were satisfactory [Box's M F (3, 65945) = 2.926, p>.05] therefore supporting the robustness of the homogeneity of variance.

Table 14: Frequency of Networking & Support MANOVA

Source	Type III *SS*	*df*	*MS*	*F**
TIME	172.14	1	172.14	2.11
GROUP	160.94	1	160.94	.57
TIMExGROUP	7.37	1	7.37	.09
ERROR	3259.72	40	81.49	

*p<.05

Based on these findings, the hypothesis that the Online BBS would have a positive effect on nurses' degree of networking and support was rejected. Reasons for this non-significant finding will be further discussed in Section 5.2.2.

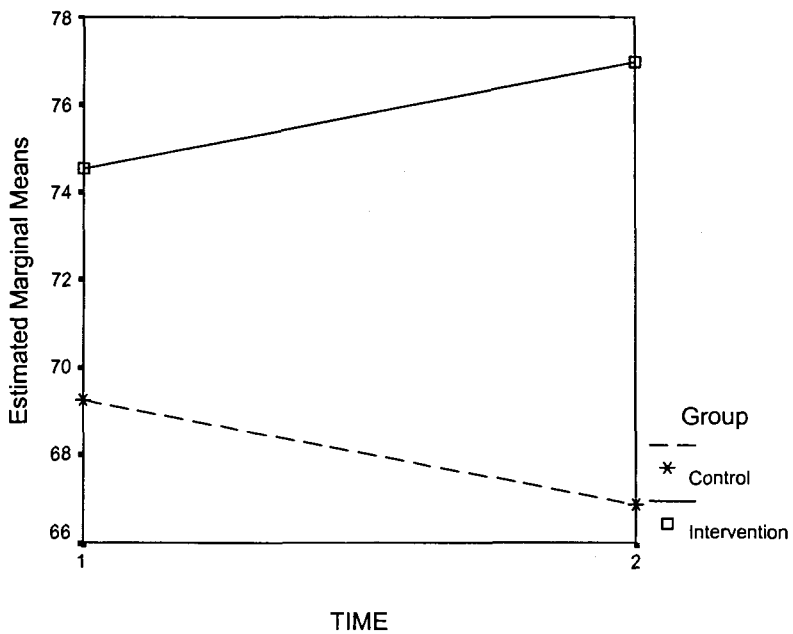
4.6.5 GLM Repeated Measures Analysis for Job Satisfaction

Hypothesis 3: Adult Internet-assisted instruction through the use of the Online BBS will have a positive effect on nurses' perceived level of job satisfaction.

Nurses were asked to rate their overall level of job satisfaction, as well as their satisfaction on 10 job-related items. A composite variable of these two measures was created in order to measure job satisfaction at both points in time. It was hypothesized that the job satisfaction scores for those in the intervention group would significantly increase over time as a function of their use of the Online BBS, while the scores for those in the control group would remain constant or decrease over time.

As shown in Figure 4, the intervention group's job satisfaction scores increased over time (T1 = 74.53, T2 = 76.98; a mean difference of +2.45, *SE* = 3.43). Conversely, the control group's job satisfaction score decreased over time (T1 = 69.25, T2 = 66.87; a mean difference of -2.38, *SE* = 4.15).

Figure 4: Overall Job Satisfaction over Time



A repeated measures multivariate analysis of variance in relation to the main effects of both independent variables (TIME = T1- T2; GROUP) were non-significant as was the interaction effect (see Table 15).

Table 15: Overall Job Satisfaction MANOVA

Source	Type III *SS*	*df*	*MS*	*F**
TIME	.01	1	.01	.00
GROUP	1199.71	1	1199.71	1.33
TIMExGROUP	118.15	1	118.15	.81
ERROR	5864.26	40	146.61	

* $p<.05$

Although change over time suggested movement in the hypothesized direction, statistical significance was not obtained. Thus, the above hypothesis that the Online BBS positively affects overall job satisfaction scores was rejected. Possible reasons for the non-significant findings will be discussed in Section 5.2.3.

4.6.6 GLM Repeated Measures Analysis for Care Provision Efficacy

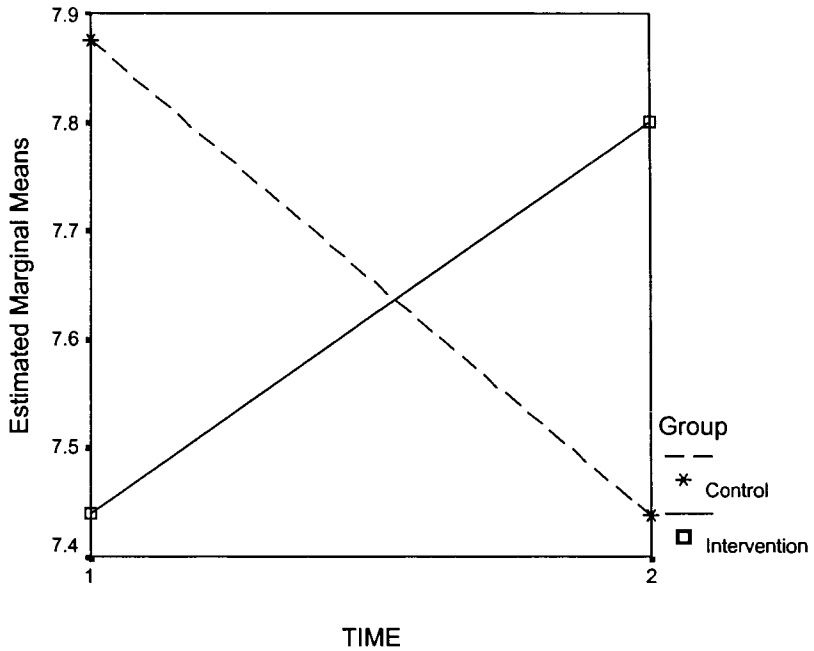
Hypothesis 4: Adult Internet-assisted instruction through the use of the Online BBS will have a positive effect on nurses' perceived care provision efficacy.

The last hypothesis pertaining to care provision efficacy, was measured by examining scores on a single item asking nurses to rate how well they felt they were able to provide care to their clients. It was hypothesized that the use of the Online BBS would significantly increase care provision efficacy for participants in the intervention group, while remaining constant or decreasing for those in the control group.

As shown in Figure 5, care provision efficacy scores increased from 7.44 at T1 to 7.80 at T2 for the intervention group (a mean difference of +.36, *SE* = .25), while decreasing from 7.86 at T1 to 7.44 at T2 for those in the control group (a mean difference

of -.44, *SE* = .30). Reasons for this unexpected trend will be further explored in Section 5.2.4.

Figure 5: Care Provision Efficacy over Time



Repeated measures multivariate analysis of variance to test the main effects for both independent variables (TIME = T1-T2; GROUP) were non-significant (see Table 16). The interaction effect, however, was statistically significant; $F(1, 40) = 4.29, p < .05, \eta^2 = .10$ (Pillai's Trace = .10). When considering the homogeneity of variance, the level was satisfactory [Box's M $F(3, 65945) = 2.93$, $p > .01$] thereby confirming the robustness of the homogeneity of variance.

Table 16: Care Provision Efficacy MANOVA

Source	Type III *SS*	*df*	*MS*	*F**
TIME	.01	1	.01	.04
GROUP	.01	1	.01	.01
TIMExGROUP	3.23	1	3.22	4.29*
ERROR	30.04	40	.75	

*$p<.05$

Through repeated measures analysis, the hypothesis that using the Online BBS significantly increases care provision efficacy scores was supported. As seen by the interaction effect, the Online BBS had a positive impact on care provision efficacy scores over time for those in the intervention group in relation to those in the control group. As a result, it appears that access to the Online BBS enabled nurses to feel they had the necessary skills to provide quality care to their clients in comparison to those who did not access the Online BBS.

4.7 Consideration of Methodological Limitations

Although an ideal methodology would have been for all participants to have entered the study at the same time, this was not feasible due to several difficulties in the recruitment of participants and the re-assessment of the eligibility criteria. To determine the potential confound introduced as a result of this methodological limitation, the Durbin-Watson statistic of autocorrelation was computed. The Durbin-Watson statistic is used to determine the possible serial correlation among residual values. The Durbin-Watson statistic was +2.27, which exceeds the range for a model with four dependent variables at an alpha level of .05 (i.e., ranged from 1.39 to 1.72), therefore suggesting that there is some degree of autocorrelation or serial correlation among residual values. Since the value was positive, it suggests that the estimates of error variance were too small, resulting in an inflation of the Type I and Type II error rate (Tabachnick & Fidell, 2001). Thus, there is a likelihood that the responses differed somewhat as a function of when participants entered the study. Further limitations of the step-wise recruitment of participants will be discussed in Section 5.2.5.

Furthermore, since levels of participation varied among intervention participants, analyses were recomputed a second time with a balanced model of 17 control group participants versus the 17 'active' users of the Online BBS. For the purposes of this study, 'active' use was defined as users who posted an original or response message to the Online BBS at least once during the study.

The repeated measures MANOVAs for these balanced models revealed no significant main effects or interaction effects (see Appendix U; Table U-1). These findings suggest that either factors aside from the Online BBS may have accounted for the original between-group differences, or a loss of power due to the reduction of cell sizes may have obscured the group differences. The reasons for non-significant findings for the balanced models will be further discussed in Section 5.2.5.

Chapter 5: Discussion

This chapter summarizes the results and implications of this study as they related to the effectiveness of an Online BBS for nurses working in LTC. Specifically, the effectiveness of the Online BBS was tested with respect to four outcome measures (i.e., information needs, networking and support, job satisfaction, and care provision efficacy). This discussion first considers the assumptions of the repeated measures analyses and the results from testing the four main hypotheses. This will be followed by a discussion of the descriptive and qualitative findings and the overall effectiveness of the Online BBS as it relates to the literature and the proposed synthesized model for adult Internet-assisted instruction. Finally, the implications, methodological limitations, and directions for future research will be discussed, and an overall conclusion for this study will be presented.

5.1 Discussion of GLM Analyses

As indicated in Section 4.6, the GLM for repeated measures analysis was used to test the four main dependent variables. Before testing each hypothesis, consideration of the MANOVA assumptions was made. Results indicate that each dependent variable was normally distributed and that each composite variable was internally consistent. When further considering the distribution of scores on each of the four dependent variables, no univariate outliers were found. Overall, the data was considered to be accurate and in compliance with the requirements for the GLM repeated measures analyses (Tabachnick & Fidell, 2001).

Moreover, reliability tests were run to ensure that all items contributing to the composite variables were related to each other. This exercise showed that all items for

the composite information needs and the networking and support variable were consistently measured and answered. Although overall consistency was supported for the composite job satisfaction variable, an item measuring perceived satisfaction with pay and fringe benefits was not highly correlated with all other items in the measure. Due to the theoretical relevance of the item and its previously justified internal consistency (Slavitt et al., 1978), however, the item remained in the composite variable for further analyses. Another reason for keeping the item was the fact that the scale was highly correlated with all other items at T2 (corrected item-total correlation = .51; *SMC* = .53; Alpha if item deleted = .95) which suggests that something may have negatively affected the scores at T1 (i.e., an event such as the job action by nurses). It should be noted that if the item is to remain in the composite variable in future studies, then the wording may need to be changed to more clearly convey what is meant by satisfaction with pay and fringe benefits. Further, the item may need to be separated into two items, as they are related yet distinct matters.

After the internal consistency of scores was verified, the MANOVA assumption of multivariate outliers was examined by means of Mahalanobis' distance. The analysis supported the multivariate normality of variables. *T*-tests were also run for all four dependent variables at T1, and chi-squares were run for all demographic and computer/Internet variables, to ensure that the groups did not differ significantly as a function of group assignment. While *t*-tests and chi-square analyses suggested that there were no inter-group differences as a function of group assignment, analysis of how participants were assigned to the control group revealed a few differences. Specifically, there were significant differences on employment status for those who were pure control

group participants and those who had access to the Online BBS but did not use it and were subsequently placed in the control group. Although this indicates that control group participants were not necessarily the same at T1, it is more likely the result of a small sample with unequal cell sizes. A larger sample with equal cell sizes may therefore eliminate this problem. Computer and Internet use among control group participants also differed significantly. Although this difference may have been attributed to a small unequal sample size, it was more likely a result of the method used to place participants into the control group (i.e., no Internet access versus not using the Online BBS). Future studies will therefore benefit from using a consistent eligibility criteria (i.e., require all participants to have Internet access) since it allows for random placement of participants into groups and reduces the chances of introducing additional confounds.

The last analysis conducted before the examination of the four main hypotheses was a univariate analysis of variance (ANOVA). This test was conducted to see if there was a significant relationship between covariates and the dependent variables. Overall, the results indicated that there were no significant associations among the prospective confounding variables and the dependent variables. Covariates were therefore not seen as accounting for any of the significant differences found in the relationship between the Online BBS and the outcome measures and thus were not controlled for in the GLM analyses.

5.2 GLM for Repeated Measures Analysis: Main Dependent Variables

5.2.1 Information Needs

Hypothesis 1: Adult Internet-assisted instruction through the use of an Online BBS will reduce the frequency of nurses' information needs.

The GLM repeated measures analysis was used to determine whether use of an Online BBS would significantly reduce the frequency of nurses' information needs. A graphical depiction of the two groups over time revealed that the frequency of information needs decreased for those in the intervention group, while increasing for those in the control group. Further, analysis conducted using the repeated measures GLM indicated that the Online BBS had a positive effect on reducing the frequency of nurses' information needs relative to control participants.

As found in previous studies, the Internet is increasingly being used as a viable information resource (Lakeman, 2000; Santi, 2001). While these studies have shown that nurses are using the Internet to gather health-related and practice-specific information, findings from the current study are unique in that it is the first to introduce an Internet forum specific to geropsychiatry and prove its effectiveness in meeting nurses' information needs. The finding that an Online BBS is effective in reducing the frequency of nurses information needs contributes much to the literature as it shows the success of implementing an online information resource and its direct impact on nurses' information needs. The fact that those in the control group experienced an increase in the frequency of information needs over time further supports the ineffectiveness or inaccessibility of current geropsychiatric resources and the need for further development and assessment of Online BBSs in work related settings.

5.2.2 Networking and Support

Hypothesis 2: Adult Internet-assisted instruction through the use of an Online BBS will positively affect nurses' degree of networking and support.

The GLM for repeated measures was also run on the composite variable for networking and support. The results of this measure indicate that nurses in both the intervention and control groups experienced an increase in networking and support scores over time. The hypothesis that those in the intervention group would experience an increase in networking and support scores over time, while those in the control group would experience a leveling off or a decrease in scores, was rejected. As a result, it can be concluded that both the intervention and control group participants experienced an increase in their perceived level of networking and support over time. While this finding was not hypothesized for those in the control group, it is necessary to explore the factors that may have contributed to this pattern. The main factor believed to have affected this group's scores was the camaraderie felt by nurses as a result of the job action and the changes/cuts to healthcare. Unions and professional groups such as the Registered Nurses Association of British Columbia (RNABC) may have provided control group participants with the networks and support needed to endure this period of change and uncertainty.

While previous studies have reported on the significance of the Internet as a medium for creating professional networks and support (Bergren, 1999; Bowers, 1997; Gomez, 1998; Jaberg, 1996; Lakeman, 2000; Salavage, 1999; Tietze & Huber, 1995; Waldo, 1998; Wright, 1996); this study, perhaps because of the circumstances surrounding the time of study, or the limited sample size, did not support this

relationship. In order to clearly establish a relationship between Online BBS use and perceived levels of networking and support, it is recommended that future studies consider the political context within which the study is conducted in addition to using larger sample sizes. This would likely reduce the potential for Type I error in reporting findings. In addition, it is necessary for future studies to identify and control for other forms of networking and support that nurses may be engaging in while being exposed to the intervention. This would enable researchers to establish a clearer link between the effectiveness of the Online BBS on the outcome of networking and support.

5.2.3 Job Satisfaction

Hypothesis 3: Adult Internet-assisted instruction through the use of the Online BBS will have a positive effect on nurses' perceived level of job satisfaction.

The GLM for repeated measures analysis was conducted on a composite measure of job satisfaction that explored both overall job satisfaction and satisfaction with 10 job-related items. The findings indicate that, over time, job satisfaction scores increased for those in the intervention group while decreasing for those in the control group. The repeated measures multivariate analysis of variance, however, was non-significant and thus did not support the hypothesis that the Online BBS would positively affect job satisfaction measures.

While job satisfaction was a secondary outcome of Online BBS use, it was expected that nurses would experience an increase in their level of job satisfaction due to the improvement in meeting their information, networking and support needs. This hypothesis was based on the fact that previous studies found nurses with unmet

information needs to be more likely than their recently educated counterparts to feel dissatisfied with their jobs (Castiglia et al., 1986; Robertson et al., 1999).

Due to the political context and the fact that it is difficult to significantly improve job satisfaction scores in a short period of time (i.e., over a four-and-a-half month period), or with a tertiary intervention, it is not surprising that the Online BBS did not have a significant impact on these scores. Furthermore, the manner in which the control group was established may have also impacted the scores over time. Although job satisfaction failed to attain statistical significance, this trend is still important to consider as there was a difference in T1 scores for those in the intervention and control groups. Specifically, the intervention group participants started off with higher mean job satisfaction scores than those in the control group. Subsequently, job satisfaction scores increased for those in the intervention group, while decreasing for those in the control group. Perhaps the differences in T1 scores was attributed to the fact that those who remained in the intervention group experienced greater autonomy and support to participate in the study. Conversely, those in the control group may have had lower satisfaction scores to begin with because of less job autonomy, support, and motivation and therefore did not use the Online BBS when they had access to it and thus were placed into the control group.

As a consequence of these findings, it is suggested that future studies consider using larger normative samples with random group assignment in order to reduce experimentionwise error. With a larger sample size, it is more likely that the sample will be normative and that a smaller effect will be supported. Randomization into groups also results in a more normative sample with less likelihood of creating potential confounds.

5.2.4 Care Provision Efficacy

Hypothesis 4: Adult Internet-assisted instruction through the use of the Online BBS will have a positive effect on nurses' care provision efficacy.

Care provision efficacy was the last hypothesis to be tested through the GLM for repeated measures analysis. Care provision efficacy was measured by asking nurses to rate on a 10-point scale, how well they felt there were able to provide care to their clients. As indicated by the results, care provision efficacy scores increased over time for those in the intervention group, while decreasing for those in the control group. Thus, the hypothesis that using the Online BBS significantly increases care provision efficacy scores was supported through the multivariate repeated measures analysis.

When considering the literature on care provision efficacy much remains to be known about how meeting nurses' information needs affect perceived levels of care provision efficacy. This result from the current study is encouraging as it suggests that nurses' use of the Online BBS had a positive effect on both their information needs and levels of perceived care provision efficacy. The direct relationship between information needs and care provision efficacy, however, needs to be explored further through future research. Future studies examining this relationship should clearly establish whether confidence or competence in action/work tasks changed as a result of nurses having their information needs met. In order to account for these variables, an overall measure of care provision efficacy should be included in future studies as well as a confidence and comfort measure for performing geropsychiatric task-specific jobs. Furthermore, open-ended questions also need to be included when asking participants about their care provision efficacy so that they can justify their answers with examples.

5.2.5 Special Consideration of Methodological Limitations for GLM Analyses

Methodological limitations were considered through the computation of the Durbin-Watson statistic of autocorrelation and a re-computation of the results with equal cell sizes. Results from the Durbin-Watson statistic suggest that there was some degree of autocorrelation among residual values. Responses were thus likely to have differed as a function of when participants entered the study. In order to address this problem, it is recommended that future studies consider the recruitment of participants during a shorter, clearly-defined time period. Furthermore, it is suggested that future studies keep constant the eligibility requirements throughout the recruitment period in order to reduce the likelihood of introducing added confounds. The problems related to the sampling methods are further discussed in Section 5.6.1.

Another consideration made was the re-computation of results comparing active intervention group participants relative to control participants. The repeated measures MANOVAs for these balanced models revealed no significant main effects or interaction effects. Therefore, the two original supported hypotheses became non-significant. The reduction of significance can be explained by either confounds accounting for the original inter-group differences, or a loss of power because of the reduction in cell sizes which may have obscured the inter-group differences. Future research with larger samples and equal cell sizes is needed in addition to random samples that control for between-group differences. This would enable the researcher to identify a clearer relationship between groups and the effects of the intervention.

5.3 Descriptive and Qualitative Statistics

Overall, descriptive statistics regarding computer and Internet factors revealed no statistically significant differences among intervention and control group participants. In total, two participants did not have computer access while three did not have Internet access. On average participants had only 1 to 6 years of experience using the Internet. However, the majority of participants tended to use the Internet a few times a week or more. Furthermore, while most participants were comfortable using the Internet, fewer were confident about their Internet skills and abilities. It should be noted that while confidence was to be improved through offering the "Introduction to the Internet" course, only four participants attended the session.

It is important to note that the high percentage of Internet users in this study may be more of a result of the sampling procedures and may not be highly representative of general access and usage among the profession of nursing. A computer needs assessment survey conducted by Santi (2001) revealed that while 86 percent of nurses had computer access, only 68 percent reported using the computer. Furthermore, when considering Internet access among participants, only 68 percent had access, while 54 percent actually used the Internet. In general, the average length of use of the Internet was consistent with this study (1 to 3 years). Not only was access higher among participants in this study but so was personal use. The majority of participants in this study also had access at work, supporting the assertion that participants were more motivated to participate in this study if informal education was viewed as a part of their job responsibilities. It should be noted that the higher percentage of Internet users in this study, especially in the workplace, may

have impacted the generalizability of the results especially as they apply to all RNs working in LTC.

When examining open-ended questions, three specific questions were asked: what would increase participants overall Internet use?; what were the motivational factors for joining the study?; and what did participants hope to gain from participating in the study?. The primary factors that would increase Internet use according to participants included: more time; more knowledge regarding effective use; increased access to up-to-date professional resources; more task-specific searches; increased access at work; having more colleagues wanting to share information; and professional sites that do not require membership fees. It is necessary to consider meeting these incentives if nurses are to increase their Internet usage. Also, future studies may want to examine whether these factors play a role in study participation and/or attrition.

When participants were asked why they joined the study, the following six themes emerged: participants felt that the research was valuable/service was needed; they wanted to increase their geropsychiatric knowledge; they wanted to have easier access to information; because of the learning opportunity and continuing education value; the chance to network with other nurses; and the opportunity to develop and enhance Internet skills. While most of these were advertised as potential benefits to participating in the study, future research might want to assess or rank these factors in order to determine the driving forces to participating in an Online BBS intervention-based study and control for them.

Lastly, when asked what participants hoped to gain from the study, four themes emerged: an increased knowledge base; the desire to interact/network with other nurses;

improved Internet skills; and increased confidence with interacting online. While the majority of these themes were tested and supported, a more specific measure needs to be developed and validated that tests whether the intervention is meeting the personal goals and objectives of the participants.

In order to elucidate the quantitative findings, participants in the intervention group were asked more subjective questions about their Online BBS usage and experience. Overall, the majority of participants rated the Online BBS as a useful information resource, while fewer were satisfied with the overall quality of postings/responses made to the Online BBS. In general, nurses stated that the Online BBS was useful as it provided a good avenue for networking, venting and education; it was a valuable resource at a time when resources were being cut; and it provided them with a national perspective. Furthermore, the use of the Online BBS encouraged some to actively seek other information resources in order to respond to postings. Lastly, the Online BBS was viewed as an accessible resource since it could be used at any time/anywhere. Others, however, felt that the overall quality of the Online BBS was moderate to low because many answers were brief and opinionated, responses were just the beginning of a complete answer, and information was irrelevant as it focused on cutbacks to healthcare rather than on geropsychiatric issues.

The majority of users logged on the Online BBS frequently and were considered 'active' users of the Online BBS, as they often posted or responded to messages. It should be mentioned that few logged on to the Online BBS without responding to postings. When considering actual postings, a total of 57 were made to the Online BBS, 21 original postings and 36 response postings. In total, 17 participants actively

participated on the Online BBS, meaning that the other eight respondents were 'passive' users. An average of 3.35 postings was made by each of the 'active' users of the Online BBS. Overall, 1,094 hits were made to the Online BBS and 5.2 percent of the hits resulted in postings. Therefore, most of the activity was passive in that users were either reading postings or logging on to see whether new information had been posted. These passive users seemed to benefit from their use of the Online BBS nonetheless.

When examining the Online BBS usage profile, the majority of postings were made from Tuesday to Thursday, from 9:00 to 11:00 p.m. and 3:00 to 6:00 p.m. This usage profile is important as it reveals the most active times of usage. Therefore, if a coordinator were hired, they would be able to monitor and respond to postings more efficiently.

In total, 11 themes emerged from the qualitative analysis of the Online BBS postings. These included medications, budget cuts, the Eden Alternative philosophy, bathing, managing difficult behaviours, staffing issues, care plans, wound management, questionable care techniques, sleeping behaviours, and other (i.e., welcome posting). It should be noted that these themes emerged from the literature as being the greatest information needs of nurses working in LTC (Pearson & Small, 1994). These needs were accounted for and measured when looking and the frequency of information needs. Although the frequency of information needs decreased among participants, more research is needed to clearly establish a link between reducing the frequency of information needs and increasing knowledge.

5.4 Model: Theoretical Integration

In light of the nature of this research, some discussion is warranted regarding the findings of the study as they relate to adult Internet-assisted instruction. Adult Internet-assisted instruction theory was used to guide the development of the intervention, the Online BBS, as well as provide direction for selecting key dependent variables. The introduction of a guiding framework also assisted in the development of the main hypotheses. Adopted from adult learning theory and Internet-assisted instruction, adult Internet-assisted instruction through the use of an Online BBS was hypothesized as having a positive effect on measures such as frequency of information needs, networking and support, job satisfaction, and care provision efficacy. GLM analysis confirmed the importance of adult Internet-assisted instruction through the use of an Online BBS in decreasing the frequency of information needs, and increasing levels of care provision efficacy relative to control participants. This framework, however, did not support the Online BBS as being a factor which increased nurses' sense of networking and support or job satisfaction, although change was observed in the hypothesized direction. Considering that the sample was limited in size, and that all hypotheses were not statistically significant, it was difficult to test this model to its full capacity (i.e., could not control for the primary factors when testing the secondary factors). It is, therefore, recommended that future studies with larger, equal cell sizes consider this guiding framework for similar interventions in order to clarify the relationship between the effectiveness of the Online BBS on meeting information needs, networking and support, job satisfaction, and care provision efficacy. Future studies may also want to control for

motivation as well as learning type in order to assess how these factors affect participation and use of the Online BBS.

5.5 Implications

Although not all of the hypotheses were statistically significant, this study sheds light on the effects of applying adult Internet-assisted instruction to an Online BBS intervention and test its effect on four outcomes: information needs; networking and support; job satisfaction; and care provision efficacy. Specifically, the Online BBS proved to be effective in reducing the frequency of information needs and increasing care provision efficacy scores for intervention participants vis-à-vis control participants. More research is needed to understand how this form of information sharing and support affects the informal information needs of nurses. Although research supports the effectiveness of online education for formal courses, the benefits of an Online BBS for informal information exchange are still not fully known (Niederhauser et al., 1999). Perhaps postings were too general and diverse to meet all of the information needs of participants, or perhaps participants were not used to the range of benefits this medium affords. Thus, even though the hypotheses are not fully supported, conditions may depend on the type of learner, as adult Internet-assisted instruction is focused on self-directed learning (Tisdell & Taylor, 1999). Different learning types, therefore, need to be controlled for in future studies examining the effect of an Online BBS system on information, networking and support.

With regards to the GPEP, the results highlight the fact that nurses have a high level of information needs that remain unmet. Although this observation may be related to the subjective nature of the measure, it is important to look at the extent to which

information needs were unmet, or whether they were merely unsatisfied with how well their information needs were met. In order for the Online BBS to be more effective as an informal means of information exchange, networking and support, it is felt that more external support is needed from Directors of Care and administrators at the onset of such intervention studies. As shown in previous studies, information needs and job satisfaction are often heightened when nurses feel supported by their DOCs and administrators to apply newly learned information to their jobs (Carr & Kazanowski, 1994; Castiglia et al., 1986; Robertson et al., 1999). Methods for establishing this support from administrators/DOCs and colleagues therefore need to be more clearly established or protocols need to be developed, as less than half of the participants (48%) felt they were supported by their administrators/DOCs to participate in this study. This is an important barrier to overcome because, as other studies have shown, increasing satisfaction with staff cohesiveness, working relationships with administration, and autonomy not only increases staff satisfaction but also positively affects care practices (Castiglia et al., 1986; Robertson et al., 1999).

Although future research is warranted to further understand the relationship between the effectiveness of the Online BBS and the above outcome measures, perhaps alternative models for acquiring and retaining participants also need to be considered. One hopeful finding for the future of the Online BBS is the fact that 92 percent of the users stated that they would recommend using the Online BBS to colleagues who are looking for professional practice support, and 86 percent would continue using the Online BBS as an information resource in the future. If the Online BBS was expanded for other nurses to use, it would be interesting to see how many previous users would continue to

maintain their usage versus how many new participants logged on and used the Online BBS. This would help to establish whether nurses are increasingly accepting and utilizing online recourses, as well as measure and determine the continued success of the Online BBS.

For the purposes of the GPEP, the Online BBS may prove to be a more useful tool in maintaining networks that were already built through face-to-face contact. Not only would this reduce uncertainties about who the other users are and their qualifications, but it would also create an environment for nurses to continue discussing information and care techniques introduced in care reviews, inservices, seminars, conferences and courses.

Another potential model would be to choose a nurse who would be willing to act as a representative/resource person from each LTC facility. As shown in Smith et al's study (1995*a*), the "train-the-trainer" model enabled nurses to learn more about care concepts through teaching. Support, therefore, needs to be created beyond courses and seminars since one-time, one-topic training sessions are only effective in meeting immediate needs and for a brief period of time (Smith et al., 1995*a*). Application and testing of this model would also support the application of general concepts to more specific problems related to the facilities' resident population (Smith et al., 1995*a*). Through Smith et al.'s study (1995*a*), this model has shown that nurses placed in this role are viewed as resource persons, and in turn, patient care – whether by nurses, nursing assistants, or by virtue of the nurse trainer feeling more competent in her role – is affected. Since the role of the GPEP is to provide geropsychiatric education through

inservice training, case reviews, and seminars, it would be interesting to determine if this model would be effective when implementing an Online BBS intervention.

Overall, it is recommended that the Online BBS be expanded for other nurses to use. However, grounding the use of the Online BBS in either the train-the-trainer model or in daily practice may result in more positive outcomes. Lastly, having a GPEP educator to act as a resource person to guide responses may also yield more positive results, as the responses would be grounded in a geropsychiatric mental health philosophy.

5.6 Methodological Limitations & Directions for Future Research

The nature of this research reflects several limitations as well as directions for future research. Although ideally an experimental design should have been used to increase the representativeness of the sample as well as the generalizability of the results, randomization into groups was not possible because of several limitations that were introduced in the recruitment phase of this study. The following sub-sections will therefore discuss the limitations with regards to the study's methodology as well as those which represent a possible threat to the validity (such as selection bias and sample size) because of the quasi-experimental design used. This will be followed by a discussion of the general methodological and design recommendations for future research.

5.6.1 Sampling Methods

Regardless of the rigorous recruitment strategy employed for this study, and the expansion of the recruitment area, relatively few nurses joined the study. In order to understand the reasons for the small sample size, it is necessary to consider the macro and micro context for this study. As stated in Section 3.2.3, the morale and job security of

RNs practicing in British Columbia were greatly affected by the job action and restructuring of the healthcare system that occurred concurrently with the recruitment and data collection phase of this study. As a result of a small initial sample size, the sampling methods had to be adapted accordingly (Section 3.2.2).

Originally, RNs from the Vancouver/Richmond area of B.C. were targeted as subjects for this study. Once the interested participants contacted the PI, they were to be randomly selected into an intervention and control group. Due to the small initial response rate, however, the recruitment strategy employed was broadened to include a larger geographical area, (i.e., the North Shore and Lower Mainland of British Columbia). Again, the expansion of the sampling frame resulted in few additional participants. At this point, the sampling frame was expanded again to include RNs from Victoria, Kamloops, and Kelowna, BC as well as Calgary, Alberta. An e-mail notice was also sent to members of the Canadian Gerontological Nursing Association's national listserve, which resulted in several participants from central and eastern provinces, namely Ontario, New Brunswick, Nova Scotia, and PEI.

The numerous changes made to the sampling frame impeded the ability to randomize group assignment. Furthermore, as a result of using a convenience sample, the results must be interpreted with caution as they may not be generalizable to all RNs working in LTC facilities throughout Canada (Babbie, 1995).

Future studies exploring the effectiveness of an Online BBS in meeting nurses' needs for information, networking and support should focus on a randomized intervention and control group design. This would help to determine whether the differences observed

were a result of the main independent variable or possible confounding factors (Babbie, 1995).

5.6.2 Selection Bias

Selection bias is defined as a problem that may arise "in the comparison of groups when the groups are formed by individuals who choose to join them and thus are not formed by a researcher assigning subjects to control and experimental groups" (Vogt, 1993, p. 207). This study was advertised in LTC facilities in B.C. and Alberta, as well as on a listserve for members of the Canadian Gerontological Nursing Association. It can be argued that the participants who joined the study were interested in participating, as they had to take the initiative of contacting the PI in order to arrange for their username and password for the Online BBS to be setup. Furthermore, it was found that those who had access to the Internet at work and at home were more likely to participate in this study than those who just had Internet access at home. Those RNs who joined the study and who had access to the Internet at work may have been more highly supported by their DOC/administrator to participate in this study. Conversely, RNs who did not have access to the Internet at work, but who decided to volunteer their personal time may have been more personally motivated to join. Lastly, it was felt that those who were comfortable with using the Internet were more likely to participate in this study regardless of the location of Internet access.

Another factor that may have affected RNs willingness to join this study was the participants' job duties and responsibilities, as well as their view of the importance of ongoing learning, networking and support. The RNs who joined this study may have been in leadership roles and educational roles within their facility, and therefore saw

participating as a natural progression of their role(s). Furthermore, they may have been more inclined or supportive of information sharing, networking and support among their professional colleagues or more in need of support especially considering the changing and problematic political context.

Although internal and external motivational factors for joining a study are important to acknowledge, deterring factors are equally important. A study by Rasch and Cogdill (1999) examining nurses practitioners' information needs indicated that 64 percent of respondents had access to a computer in their practice setting. Of those with access to a computer in their practice setting, only 66 percent had access to e-mail and 58 percent had access to the World Wide Web (Rasch & Cogdill, 1999). Lack of Internet access in a practice setting was seen as a major deterrent to participating and may account for the relatively small sample size. Another deterring factor was the need for nurses to have designated time and support to engage in professional development and ongoing education ventures during work hours. If the employer did not allocate time for these activities, then a personal time commitment was necessary for RNs to participate in this study. This meant that participants were using the Online BBS at home during their personal time. This was seen as a major deterrent for participating by a profession that is already overworked and overburdened.

Another deterring factor was related to the fact that there was no incentive for those without Internet access to join the study since there were no additional services or information given to this group. This was supported by the fact that only seven participants joined the study who did not have access to the Internet.

Although it is difficult to eliminate selection biases, future studies may want to consider administering the pretest questionnaire to a representative sample of RNs working in LTC. Once questionnaires are returned, respondents could be checked to see if they have access to the Internet. Once access is established, participants could then be randomized into an intervention or control group. This would help to ensure that both motivated and non-motivated nurses participated in the study. The barrier to overcome, however, would be continued participation and use of the intervention.

5.6.3 Sample Size

As discussed in Section 3.2.2, only a large effect size of .57 was detectable (power = .80; alpha = .05) because of the relatively small sample size ($n > 14$ in the smaller cell). In order to detect the expected moderate to small effect size of .35 (power = .80; alpha = .05), a sample of 34 participants would have been needed in each group. In order to increase the sample size and reduce the chance of supporting a false-negative finding, future studies need to focus on recruiting RNs from a larger representative sample at the outset of the study. Such recruitment strategies may include going to individual LTC facilities to canvas for participants, distributing posters to wider array of Canadian gerontology and nursing listserves, nursing newsletters and associations, and targeting a wider range of LTC facilities.

Increasing the original sampling frame would increase the likelihood of replicating the study as well as eliminate the problems of extending the study period (i.e., attrition, fewer postings). Due to the succession of methodological changes made to this study, it is unknown how many participants would have joined nationally if they were initially recruited. Although LTC facilities were directly contacted by the PI in British

Columbia and Calgary, only nurses who were members of the Canadian Gerontological Nursing Association's national listserve living outside of these two areas would have received the recruitment posting. The value of a pure national sample is to not only increase the generalizability of the results, but to also increase the number of participants using the Online BBS. Increasing the number of participants would likely have increased the number of postings made to the Online BBS, as well as the frequency of postings, which would potentially have increased statistical power and the ability to detect the effects of the intervention. Furthermore, increasing the number of postings may also result in an increase in the quality of postings and the number of postings responded to, therefore meeting a greater number of the information needs of participants.

5.6.4 General Directions for Future Research

The exploratory nature of this research has lead to several possible directions for future research, especially regarding methodological approaches to studying information sharing, networking and support in an Online environment.

Despite the findings, much still remains to be known about the most effective way to meet the geropsychiatric information needs of nurses working in LTC. Although many participants felt that the Online BBS was useful, and the frequency of their information needs decreased as a result of using the Online BBS relative to controls, participants stated that they wished the replies to the original postings were more grounded in professional practice. In order to increase the validity of the postings, future research may want to consider applying a similar design but with the inclusion of a geropsychiatric nurse educator who would act as a coordinator for the Online BBS. Having a coordinator would help to ensure that all postings were responded to, and that

the resources provided were helpful in answering participants' questions and concerns. A coordinator would also help to enable nurses to build upon each other's knowledge while discussing solutions to original postings.

Another approach which may prove to be just as effective would be to have a coordinator build discussion topics that were identified as being unmet in the information needs section of the pretest questionnaire. This might allow participants to stay more focused on the topic of geropsychiatry. Furthermore, it may also help to stimulate more online dialogue as participants would have a defined point of departure for deriving pertinent questions from a list of topics. Timms (1995) reinforces the importance of having a foundation for identifying and expressing information needs, especially if the learner does not have sufficient resources, adequate vocabulary, or the conceptual ability to convey them. Having topics listed and a brief introduction to each topic, therefore, helps to create a context for understanding and identifying where personal gaps in knowledge exist, as well as forging a supportive environment for posing questions and sharing information.

With regards to participant recruitment, this study only included RNs who worked in LTC facilities because of the similarity in work environment and client-based needs. This group was also targeted because of the geropsychiatric focus and the affiliation with the GPEP. Lastly, this group was chosen because, as identified in the literature, RNs working in LTC facilities have the greatest information needs (Glass & Todd-Atkinson, 1999; Lusk, 1999; Nazarko, 1996; Robertson et al., 1999; Smith et al., 1995*a*; Timms, 1995; Whall et al., 1992). Although RNs working in LTC were recruited for the purposes of this study, it is also important for future research to assess the information needs of

RNs in other settings, especially those who work with similar clientele but who may feel more isolated in their practice (i.e., rural based and community based RNs). Key factors such as information needs, networking and support, job satisfaction and care provision efficacy of such RNs, should be compared to those RNs working in LTC facilities to see if there is a statistically significant difference in the effectiveness of the Online BBS depending on the work environment.

Although the Online BBS was concluded to be a useful information resource, future studies may want to account and control for other resources being used in conjunction with the Online BBS in order to identify other possible factors that may have an impact on the outcome variables. These resources should include traditional resources such as textbooks, journal articles, colleagues, and clinical nurse specialists, as well as emerging resources such as newgroups/listserves, Online BBSs, and Websites.

Future studies may also want to consider employing a multi-level design. Although open-ended questions were included in the pretest and posttest questions, many of the subjects disregarded these sections and left them blank. Therefore, in order to obtain a more complete picture regarding the subjective effectiveness of the Online BBS, it is necessary to consider using focus groups in the design of future studies. Lastly, future studies need to ensure a larger sample size with equal cell sizes in order to be able to increase the statistical significance of the findings and to decrease the chances of Type I error.

5.7 Conclusion

The results from this study support the emergence of the Internet, and more specifically Online BBSs, as effective resources in reducing the frequency of information

needs among nurses. The Online BBS also proved to be effective in increasing the level of perceived care provision efficacy of nurses in the intervention group relative to control participants. These findings are of major importance as they underscore the need for the continued development and testing of interactive online resources that work to maintain professional support and development.

While a great deal of research is still needed in the emerging area of Online BBSs as information resources and networks, this study offers a salient indication of how a participant controlled Online BBS unfolds and its effectiveness in meeting nurses' information needs and increasing their level of care provision efficacy. This intervention also provided nurses with an efficient and effective way of having their information needs met, while creating a national network for information exchange and support. This is important, as nurses working in LTC have been identified as having the highest level of unmet information needs and often lack the time and resources to effectively address their needs.

The fact that the majority of participants were satisfied with the overall usefulness of the Online BBS, and 92 percent would recommend using the Online BBS to their colleagues, gives credence to the fact that online informal resources and networks are becoming an acceptable and utilized information resource. Thus, as Internet access becomes more prevalent in the workplace, and as nurses become increasingly constrained in their jobs, it will be necessary to consider the full implications of applying adult Internet-assisted instruction to online resources.

Although this study had several limitations, the goal of meeting nurses' information needs through Internet systems should not be ignored. By allowing nurses to

continue to post task- or client-specific questions and to embrace the concept of self-directed learning, it is hoped that the gap between geropsychiatric information needs and knowledge will decrease. While it is hoped that this will translate into an increased sense of support and job satisfaction for nurses, the ultimate goal is to ensure that nurses are confident and able to provide the necessary geropsychiatric care needed for residents with increasingly complex care demands.

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APPENDIX A

LETTER TO THE ADMINISTRATOR AND DIRECTOR OF CARE

September 11, 2001

Attention Directors of Care/Residential Care Managers:

The Geropsychiatric Education Program, in conjunction with Selena Santi, Program Consultant and Master's of Art in Gerontology candidate at Simon Fraser University, offers your nurses a unique opportunity to take part in a Master's Thesis research project. The project pilots the use of an Online Bulletin Board System (BBS), over a three-month period, to support nurses in accessing and sharing geropsychiatric health information. This is an exciting opportunity for nurses to learn how to use the Internet and Online BBS to access information, post questions and work through case studies.

We are requesting your initial support for this study by displaying information/recruitment posters in your facility.

If you are interested in supporting your nurses to participate please sign below and return this fax to (604) 739-9041 and we will mail a package containing information/recruitment posters.

If you have any questions regarding this study, please call Selena Santi at (604) 733-5318 or Joan Hibbard (604) 742-5237. Thank you for your time and interest in this project.

Sincerely,

Selena Santi
M.A. in Gerontology Candidate

Joan Hibbard
GPEP Educator

Name of DOC (please print):_____

Name of Facility: _____

Signature: _____

Date: _____

APPENDIX B

ETHICS APPROVAL FORM

SIMON FRASER UNIVERSITY

OFFICE OF VICE-PRESIDENT, RESEARCH

BURNABY, BRITISH COLUMBIA
CANADA V5A 1S6
Telephone: (604) 291-4370
FAX: (604) 291-4860

September 13, 2001

Ms. Selena Marie Santi
Graduate Student
Gerontology
Simon Fraser University

Dear Ms. Santi:

Re: Online Bulletin Board Systems: An Effective Resource for Geropsychiatric Nurses Working in Long Term Care?

I am pleased to inform you that the above referenced Request for Ethical Approval of Research has been approved on behalf of the University Research Ethics Review Committee. This approval is in effect for twenty-four months from the above date. Any changes in the procedures affecting interaction with human subjects should be reported to the University Research Ethics Review Committee. Significant changes will require the submission of a revised Request for Ethical Approval of Research. This approval is in effect only while you are a registered SFU student.

Best wishes for success in this research.

Sincerely,

Dr. James R.P. Ogloff, Chair
University Research Ethics Review Committee

APPENDIX C

COVER LETTER FOR DIRECTOR'S OF CARE/RESIDENTIAL CARE MANAGERS

October, 2001

Dear Director of Care/Residential Care Manager:

This letter is a follow up to the phone call you received earlier this week regarding my Master's of Arts thesis that I am conducting with Simon Fraser University and the Geropsychiatric Education Program (GPEP) of the Vancouver/Richmond Health Board. For my thesis, I will be developing and piloting an Online Bulletin Board System (BBS) for nurses working in long-term care in the Lower Mainland area. The Online BBS is a forum on the Internet where nurses can post questions, share information and solve problems related to geropsychiatric mental health. The goal of my thesis is to understand the effectiveness of this innovative and interactive system as it relates to the practice of nursing.

If the Online BBS proves to be beneficial to nurses working in long-term care facilities, GPEP will expand its existing website (www.gpep.ca) to include an Online BBS that is accessible to all healthcare professionals working in gerontology and geriatric mental health. As an education service, GPEP sees technology as an opportunity to provide enhanced information and support to a wider variety of care providers in an easily accessible manner.

This study will give nurses the opportunity to gain valuable information related to geriatric mental health, to form a community/network of professionals interested in geriatric mental health, and to support others and be supported through the sharing of clinical information.

As the Director of Care/Residential Care Manager, I hope that you will encourage your nurses to participate in this study. Included with this letter you will find posters and information sheets to post within your facility. If there are any interested nurses that you know of, please ask them to contact Selena Santi at (604) 733-5318 for further information.

Sincerely,

Selena Santi, M.A. Candidate
Simon Fraser University

APPENDIX D

DESCRIPTION OF STUDY

Dear Nurses:

My name is Selena Santi and I am a Master's of Arts in Gerontology student at Simon Fraser University. I am also a consultant and web designer for the Geropsychiatric Education Program (GPEP) of the Vancouver/Richmond Health Board (www.gpep.ca). For my thesis, I am developing and piloting an Online Bulletin Board System (BBS) for nurses working in long-term care (LTC) in the Lower Mainland. The Online BBS is a forum on the Internet where you can post questions, share information and solve problems related to geropsychiatric mental health. My goal is to understand the effectiveness of this system as it relates to the practice of nursing.

This study will give you the opportunity to gain access to valuable information related to geriatric mental health, to form a community/network of professionals interested in geriatric mental health, and to support others and be supported through the sharing of clinical information.

This study is open to all nurses working in care facilities in the Lower Mainland. In order to participate, you must have access to the Internet and have some experience with using computers. If you are selected to pilot the Online BBS, you will be invited to attend a three-hour session on *How to Use the Internet and Online BBS* at Simon Fraser University at the Harbour Centre.

Your Director of Care has been informed about the project and has given me his/her support to recruit participants for my thesis.

Call me at (604) 733-5318 if you are interested in participating in this study. Feel free to pass my number along to any interested colleagues.

Sincerely,

Selena Santi
Master's of Art in Gerontology Candidate
Simon Fraser University

APPENDIX E

INFORMATION POSTER

ARE YOU A REGISTERED NURSE WHO WORKS WITH RESIDENTS WHO HAVE GEROPSYCHIATRIC CHALLENGES?

Would you like to improve your skills in geropsychiatry?

Would you like the opportunity to ask questions, network, and share information with other nurses?

Here is your chance to participate in an interactive Online nursing education experience!

A Master's of Gerontology student at Simon Fraser University in conjunction with the V/RHB Geropsychiatric Education Program is looking for RNs who:

- Work in LTC facilities in the Lower Mainland
- Have at least minimal experience with computers
- Have access to the Internet
- Are interested in networking and support

If you are interested in participating in this exciting study, please contact Selena Santi at (604) 733-5318 for more information.

APPENDIX F

INTRODUCTION LETTER

Dear Nurses:

Thank you for agreeing to take part in the study, "Online Bulletin Board Systems: An Effective Resource for Geropsychiatric Nurses Working in Long Term Care?"

The purpose of the study is to determine the value of using an Online Bulletin Board System (BBS) in meeting nurses' needs for information, networking and collegial support. The Online BBS is an Internet forum where nurses can post questions, share information and solve problems related to geropsychiatric mental health.

This study will give you the opportunity to gain access to valuable information related to geropsychiatric mental health, form a community/network of professionals interested in geriatric mental health, and support others and be supported through the sharing of clinical information.

Over a three-month period, you will have the opportunity to post and respond to questions, resources, and case studies pertaining to geropsychiatric mental health. Please check the Online BBS at least weekly for new postings, information, and resources. After the three-month period, you will receive a short posttest questionnaire.

Your user name and password for the Online BBS are:

User Name:
Password:

Call me at (604) 733-5318 or e-mail me at smsanti@sfu.ca if you have problems with your password, or need help using the Online BBS. Please attach both your home and work number so I can get back to you promptly.

All participants will be entered into a draw for a chance to win a $50.00 gift certificate to Chapters/Indigo. The draw will take place at the conclusion of the study.

Selena Santi

M.A. in Gerontology Candidate
Simon Fraser University

APPENDIX G

CONSENT FORM FOR SIMON FRASER UNIVERSITY

INFORMED CONSENT BY SUBJECTS TO PARTICIPATE
IN A RESEARCH PROJECT OR EXPERIMENT

The University and those conducting this project subscribe to the ethical conduct of research and to the protection at all times of the interests, comfort, and safety of subjects. This form and the information it contains are given to you for your own protection and full understanding of the procedures. Your signature on this form will signify that you have received a document which describes the procedures, possible risks, and benefits of this research project, that you have received an adequate opportunity to consider the information in the document, and that you voluntarily agree to participate in the project.

Having been asked by Selena Santi of the Gerontology Program of Simon Fraser University to participate in this research project, I have read the procedures specified in the "Cover Letter." I understand the procedures to be used in this project, as well as my right to withdrawal my participation in the study at any time.

I understand that if I have any questions about the research, I may contact either Selena Santi at (604) 733-5318, or Dr. Andrew Wister, Director of the Masters Program in Gerontology at Simon Fraser University, and supervisor to this study at (604) 291-5044.

Further, I understand that I may obtain copies of the results of this study, upon its completion, by contacting Selena Santi.

I have been informed that the research material will be held confidential by the Principle Investigator. Surveys will be coded for the purpose of matching pretest and posttest questionnaires only. At no time will the code or identifying information be used to indicate responses. The data will be safeguarded until the research is complete, at which time all information will be destroyed.

I agree to participate in this study by completing a pretest and posttest questionnaire. If I am selected to be in the intervention group, I agree to use the Online Bulletin Board System for its stated purposes only. I agree not to share my password or user identification with anyone else, and that all information posted on the Online is to remain confidential.

Name (please print): _____
Telephone Number: _____
Address: _____
_____
Signature: _____ Witness: _____
Date: _____

APPENDIX H

PRETEST QUESTIONNAIRE

NURSES INFORMATION NEEDS AND RESOURCE SURVEY

Attention: Selena Santi
Geropsychiatric Education Program (GPEP)
#228-1195 West Broadway
Vancouver, BC V6H 3X5
Facsimile: (604) 739-9041

Thank you for taking the time to complete this survey. The information you provide will remain confidential and will be used to understand the effectiveness of an Online Bulletin Board System in meeting your information needs. Please read each of the following questions and indicate your response by either placing an 'X' in the appropriate box, circling the appropriate number, or by filling in the blank spaces provided (please print clearly). Unless otherwise specified, please mark only one response per question. We look forward to receiving your completed questionnaire by Wednesday, January 23, 2002. Please fax or mail your completed questionnaire to the above address.

PART A: Information Needs & Access

1. Over the past **three months**, how **often** did you need information on the following topics? (Please circle the appropriate numbers)

	Never	Once every few months	At least once a month	Once every few weeks	A few times a week or more
a) Drug therapy and interactions	1	2	3	4	5
b) Addressing complex diagnoses	1	2	3	4	5
c) Knowing when to refer	1	2	3	4	5
d) Physical assessments	1	2	3	4	5
e) Skin care & wound management	1	2	3	4	5
f) Effective communication techniques	1	2	3	4	5
g) Signs, symptoms, & treatment of depression	1	2	3	4	5
h) Signs, symptoms, & treatment of dementia	1	2	3	4	5
i) Signs, symptoms, & treatment of delirium	1	2	3	4	5
j) Dealing with challenging behaviours	1	2	3	4	5
k) Psychological assessments	1	2	3	4	5
l) Providing palliative care	1	2	3	4	5
m) Monitoring wandering behaviours	1	2	3	4	5
n) Infectious diseases	1	2	3	4	5
o) Dealing with families	1	2	3	4	5
p) Coping with grief and loss	1	2	3	4	5
q) Other (please specify) _____ _____	1	2	3	4	5

2. Over the past **three months**, how **well** were your information needs met in the following areas? (Please circle the appropriate numbers)

	Not at all									Extremely well
a) Drug therapy and interactions	1	2	3	4	5	6	7	8	9	10
b) Addressing complex diagnoses	1	2	3	4	5	6	7	8	9	10
c) Knowing when to refer	1	2	3	4	5	6	7	8	9	10
d) Physical assessments	1	2	3	4	5	6	7	8	9	10
e) Skin care & wound management	1	2	3	4	5	6	7	8	9	10
f) Effective communication techniques	1	2	3	4	5	6	7	8	9	10
g) Signs, symptoms, & treatment of depression	1	2	3	4	5	6	7	8	9	10
h) Signs, symptoms, & treatment of dementia	1	2	3	4	5	6	7	8	9	10
i) Signs, symptoms, & treatment of delirium	1	2	3	4	5	6	7	8	9	10
j) Dealing with challenging behaviours	1	2	3	4	5	6	7	8	9	10
k) Psychological assessments	1	2	3	4	5	6	7	8	9	10
l) Providing palliative care	1	2	3	4	5	6	7	8	9	10
m) Monitoring wandering behaviours	1	2	3	4	5	6	7	8	9	10
n) Infectious diseases	1	2	3	4	5	6	7	8	9	10
o) Dealing with families	1	2	3	4	5	6	7	8	9	10
p) Coping with grief and loss	1	2	3	4	5	6	7	8	9	10
q) Other (please specify) _____ _____	1	2	3	4	5	6	7	8	9	10

PART B: Information Resources

1. Over the past **three months**, how **often** did you use the resources listed below to learn more about how to meet the specific needs of your clients? (Please circle the appropriate numbers)

	Never	Once every few months	At least once a month	Once every few weeks	A few times a week or more
a) General Practitioner (GP)	1	2	3	4	5
b) Medical Coordinator	1	2	3	4	5
c) Head Nurse	1	2	3	4	5
d) Other Nurses at work	1	2	3	4	5
e) Nurses outside of work	1	2	3	4	5
f) Health Unit Facility Liaisons	1	2	3	4	5
g) Text books	1	2	3	4	5
h) Journal articles	1	2	3	4	5
i) Pharmacists	1	2	3	4	5
j) Consultation with Clinical Nurse Specialists	1	2	3	4	5
k) Consultation with Health Educators	1	2	3	4	5
l) Consultation with Mental Health Team	1	2	3	4	5
m) Newsgroups/Listserves	1	2	3	4	5
n) Online Bulletin Boards	1	2	3	4	5
o) Websites	1	2	3	4	5

p) Inservices ---1----------2----------3----------4----------5---
q) Clinical Updates ---1----------2----------3----------4----------5---
r) Conferences ---1----------2----------3----------4----------5---
s) Other (please specify) _____
_____ ---1----------2----------3----------4----------5---

2. Over the past **three months**, how **helpful** did you find the information obtained from the resources listed below? (Please circle the appropriate numbers)

	Not at all helpful									Extremely helpful
a) General Practitioner (GP)	1	2	3	4	5	6	7	8	9	10
b) Medical Coordinator	1	2	3	4	5	6	7	8	9	10
c) Head Nurse	1	2	3	4	5	6	7	8	9	10
d) Other Nurses at work	1	2	3	4	5	6	7	8	9	10
e) Nurses outside of work	1	2	3	4	5	6	7	8	9	10
f) Health Unit Facility Liaisons	1	2	3	4	5	6	7	8	9	10
g) Text books	1	2	3	4	5	6	7	8	9	10
h) Journal articles	1	2	3	4	5	6	7	8	9	10
i) Pharmacists	1	2	3	4	5	6	7	8	9	10
j) Consultation with Clinical Nurse Specialists	1	2	3	4	5	6	7	8	9	10
k) Consultation with Health Educators	1	2	3	4	5	6	7	8	9	10
l) Consultation with Mental Health Team	1	2	3	4	5	6	7	8	9	10
m) Newsgroups/Listserves	1	2	3	4	5	6	7	8	9	10
n) Online Bulletin Boards	1	2	3	4	5	6	7	8	9	10
o) Websites	1	2	3	4	5	6	7	8	9	10
p) Inservices	1	2	3	4	5	6	7	8	9	10
q) Clinical Updates	1	2	3	4	5	6	7	8	9	10
r) Conferences	1	2	3	4	5	6	7	8	9	10
s) Other (please specify) _____										
_____	1	2	3	4	5	6	7	8	9	10

PART C: Care Provision Efficacy

1. Over the past **three months**, how **well** do you feel you were able to provide care to your clients? (Please circle the most appropriate number)

-------1-------2-------3-------4-------5-------6-------7-------8-------9-------10-------

Not at all **Extremely well**

PART D: Networking & Support

1. Over the past **three months**, how **often** did you network with nurses who **work outside** of your facility? (Please circle the appropriate number)

-------1----------2----------3----------4----------5-------

Never	Once every few months	At least once a month	Once every few weeks	A few times a week or more

2. Over the past **three months**, how **often** did you collaborate with **nurses outside** of your facility in order to obtain information on the topics listed below? (Please circle the appropriate numbers)

	Never	Once every few months	At least once a month	Once every few weeks	A few times a week or more
a) Drug therapy and interactions	1	2	3	4	5
b) Addressing complex diagnoses	1	2	3	4	5
c) Knowing when to refer	1	2	3	4	5
d) Physical assessments	1	2	3	4	5
e) Skin care & wound management	1	2	3	4	5
f) Effective communication techniques	1	2	3	4	5
g) Signs, symptoms, & treatment of depression	1	2	3	4	5
h) Signs, symptoms, & treatment of dementia	1	2	3	4	5
i) Signs, symptoms, & treatment of delirium	1	2	3	4	5
j) Dealing with challenging behaviours	1	2	3	4	5
k) Psychological assessments	1	2	3	4	5
l) Providing palliative care	1	2	3	4	5
m) Monitoring wandering behaviours	1	2	3	4	5
n) Infectious diseases	1	2	3	4	5
o) Dealing with families	1	2	3	4	5
p) Coping with grief and loss	1	2	3	4	5
q) Other (please specify) _____ _____	1	2	3	4	5

3. Over the past **three months**, how **often** did you use the following methods to **network** with other nurses? (Please circle the appropriate numbers)

	Never	Once every few months	At least once a month	Once every few weeks	A few times a week or more
a) Professional associations	1	2	3	4	5
b) Meetings	1	2	3	4	5
c) Educational sessions	1	2	3	4	5
d) Conferences	1	2	3	4	5
e) Clinical updates	1	2	3	4	5
f) Inservices	1	2	3	4	5
g) E-mail	1	2	3	4	5

h) Newsgroups/Listerves ---1---------2---------3---------4---------5---
i) Newsletters ---1---------2---------3---------4---------5---
j) Online Bulletin Board Systems ---1---------2---------3---------4---------5---
k) Other (please specify) _____
_____ ---1---------2---------3---------4---------5---

4. On the following scale, rate how **well** you feel you **identify** with the profession of nursing? (Please circle the appropriate number)

-------1-------2-------3-------4-------5-------6-------7-------8-------9-------10-------

Not at all **Extremely well**

PART E: Job Satisfaction

1. On the following scale, **circle** the response that best represents your **overall satisfaction** with your job.

-------1-------2-------3-------4-------5-------6-------7-------8-------9-------10-------

Not at all satisfied **Extremely satisfied**

2. Using the following scale, rate how **satisfied** you are with the following aspects of your job. (Please circle the appropriate numbers)

	Not at satisfied	Extremely satisfied
a) Amount of pay and fringe benefits	---1---2---3---4---5---6---7---8---9---10---	
b) Autonomy or job-related independence	---1---2---3---4---5---6---7---8---9---10---	
c) Task requirements	---1---2---3---4---5---6---7---8---9---10---	
d) Organizational requirements	---1---2---3---4---5---6---7---8---9---10---	
e) Interaction (formal & informal)	---1---2---3---4---5---6---7---8---9---10---	
f) Job prestige	---1---2---3---4---5---6---7---8---9---10---	
g) Job mobility	---1---2---3---4---5---6---7---8---9---10---	
h) Opportunities to network	---1---2---3---4---5---6---7---8---9---10---	
i) Opportunities to engage in ongoing education	---1---2---3---4---5---6---7---8---9---10---	
j) Being part of a collaborative healthcare team	---1---2---3---4---5---6---7---8---9---10---	

PART E: Internet Access Questions

1. Do you have access to a computer?
   a) ☐ No (If no, please skip to PART G, Question 1)
   b) ☐ Yes

2. Over the past **three months**, how **often** did you use the computer? (Please circle the appropriate number)

-------1----------	-------2----------	-------3----------	-------4----------	-------5-------
Never	**Once every few months**	**At least once a month**	**Once every few weeks**	**A few times a week or more**

3. Using the following scale, rate how **well** you feel you can complete the following computer tasks. (Please circle the appropriate numbers)

	Not at all									Extremely well
a) Turning the computer on and off	---1	---2	---3	---4	---5	---6	---7	---8	---9	---10---
b) Using the mouse	---1	---2	---3	---4	---5	---6	---7	---8	---9	---10---
c) Using the keyboard	---1	---2	---3	---4	---5	---6	---7	---8	---9	---10---
d) Using Microsoft Windows	---1	---2	---3	---4	---5	---6	---7	---8	---9	---10---
e) Using a wordprocessor (i.e. Word)	---1	---2	---3	---4	---5	---6	---7	---8	---9	---10---

4. Do you have **access** to the Internet?
   a) ☐ No (If no, please skip to PART G, Question 1)
   b) ☐ Yes

5. Do you have access to the Internet at **home**?
   a) ☐ No b) ☐ Yes

6. Do you have access to the Internet at **work**?
   a) ☐ No b) ☐ Yes

7. Do you **personally use** the Internet?
   a) ☐ No b) ☐ Yes

8. How **long** have you been **using** the Internet?
   a) ☐ Less than 6 months
   b) ☐ 6 to 12 months
   c) ☐ 1 to 3 years
   d) ☐ 4 to 6 years
   e) ☐ More than 6 years

9. Over the past **three months**, how **often** did you use the Internet? (Please circle the appropriate number)

-------1----------	-------2----------	-------3----------	-------4----------	-------5-------
Never	**Once every Few months**	**At least once a month**	**Once every few weeks**	**A few times a week or more**

10. Over the past **three months**, how **often** did you use the Internet for the following reasons? (Please circle the appropriate numbers)

	Never	Once every few months	At least once a month	Once every few weeks	A few times a week or more
a) Networking with other nurses	1	2	3	4	5
b) Networking with other healthcare professionals	1	2	3	4	5
c) Finding information regarding ongoing education courses/inservices	1	2	3	4	5
d) Finding information regarding conferences	1	2	3	4	5
e) Finding information regarding mental health services	1	2	3	4	5
f) Finding information regarding community support services	1	2	3	4	5
g) To find Online journal articles	1	2	3	4	5
h) Other (please specify) _____ _____	1	2	3	4	5

11. On the following scale, please rate how **comfortable** you are with using the Internet. (Please circle the appropriate number)

-------1-------2-------3-------4-------5-------6-------7-------8-------9-------10-------

Not at all comfortable **Extremely comfortable**

12. On the following scale, please rate how **confident** you are with using the Internet. (Please circle the appropriate number)

-------1-------2-------3-------4-------5-------6-------7-------8-------9-------10-------

Not at all confident **Extremely confident**

13. What would encourage you to use the Internet more than you currently do?

_____

_____

_____

_____

_____

PART G: Demographics

For statistical purposes, please answer the following questions. The information that you provide allows us to know more about the group that we are servicing.

1. Sex
   a) □ Male b) □ Female

2. Marital Status
   a) ☐ Married/Common-Law
   b) ☐ Divorced/Separated
   c) ☐ Widowed
   d) ☐ Never Married

3. Year of birth: _____

4. Is English your first language?
   a) ☐ No b) ☐ Yes
      ↳ IF NO, please identify your first language: _____

5. On the following scale, please rate how **comfortable** you are speaking English. (Please circle the appropriate number)

   -------1-------2-------3-------4-------5-------6-------7-------8-------9-------10-------

   Not at all comfortable — **Extremely comfortable**

6. On the following scale, please rate how **comfortable** you are reading English. (Please circle the appropriate number)

   -------1-------2-------3-------4-------5-------6-------7-------8-------9-------10-------

   Not at all comfortable — **Extremely comfortable**

7. On the following scale, please rate how **comfortable** you are writing in English. (Please circle the appropriate number)

   -------1-------2-------3-------4-------5-------6-------7-------8-------9-------10-------

   Not at all comfortable — **Extremely comfortable**

8. What is the **highest level** of education you have completed to date?
   a) ☐ Completed a hospital based RN program (i.e. RN)
   b) ☐ Completed a community college/university certificate or diploma (i.e. RN)
   c) ☐ Completed an undergraduate degree (i.e. B.ScN.)
   d) ☐ Completed a graduate degree (i.e. M.A, M.Sc.N.)
   e) ☐ Other post secondary (please specify) _____

9. Did you obtain your education in Canada?
   a) ☐ No b) ☐ Yes
      ↳ If NO, please indicate the **country** where you obtained your education.

      _____

10. Which of the following **best** describes your professional designation?
    a) ☐ Registered Nurse (RN, B.ScN.)
    b) ☐ Registered Psychiatric Nurse (RPN)
    c) ☐ Clinical Nurse Specialist (CNS)
    d) ☐ Other (please specify) _____

11. How many years have you been working at your **current** place of employment?
    a) ☐ Less than 1 year
    b) ☐ 1 to 9 years
    c) ☐ 10 to 19 year
    d) ☐ 20 to 29 years
    e) ☐ 30 to 39 years
    f) ☐ More than 40 years

12. How many years in **total** have you been working with the elderly?
    a) ☐ Less than 1 year
    b) ☐ 1 to 9 years
    c) ☐ 10 to 19 years
    d) ☐ 20 to 29 years
    e) ☐ 30 to 39 years
    f) ☐ More than 40 years

13. Which of the following **best** describes your work status?
    a) ☐ Full-time
    b) ☐ Part-time
    c) ☐ Casual
    d) ☐ Other (please specify) _____

14. Which of the following shifts do you work **most often**?
    a) ☐ Mornings
    b) ☐ Days
    c) ☐ Afternoons
    d) ☐ Evenings
    e) ☐ Nights
    f) ☐ On full shift rotation
    g) ☐ Other (please specify) _____

15. Which of the following **best** describes the level of care provided by your facility?
    a) ☐ Intermediate care
    b) ☐ Extended care
    c) ☐ Private Hospital
    d) ☐ Multilevel care
    e) ☐ Other (please specify) _____

16. Why did you decide to take part in this study?

17. What do you hope to gain from using the Online Bulletin Board System?

18. If you would like to add any additional comments, please do so in the space provided below.

Thank you for taking the time to complete this questionnaire!

APPENDIX I

LOGGING ON & USING THE ONLINE BBS

The following is an information sheet on how to log on and use the Online BBS. Also included is a sheet on the 'netiquette' for this website. If you have any problems accessing the site, please call me at (604) 733-5318, or e-mail me at smsanti@sfu.ca. If you have not set up your user name and password for the site, please contact me.

- Go to www.gpep.ca
- Scroll down to 'New' on the homepage.
- There is a link to the Online BBS.
- Click on the link.
- A box will appear asking you to enter your User Name and Password.
- Enter this information and hit enter.
- You should now be on the 'Welcome Page' for the Online BBS.
- There are four main pages to the Online BBS:
    1. **Welcome Page** – has links to the other three main pages, has the netiquette to follow for the site, and has my contact e-mail address.
    2. **Contents Page** – has a listing of the postings according to date subject and time.
    3. **Search Page** – allows you to search the Online BBS for key words and phrases for quick access to a subject specific posting.
    4. **Post Page** – allows you to post a message to the Online BBS. You will be asked to enter a 'Subject title' and a message under 'Content'.
- In order to read messages and respond to them, go to the 'Contents Page'. Click on the Subject title that you are interested in reading. The posting will come up. Click on 'reply' in the pages menu. Once you reply, you will be able to view your message on the 'contents page.'
- If you would like to try posting and responding to a message, then please type 'testing' into the Subject header line.
- Please check the Online BBS at least once a week for new postings and post messages as often as you would like.
- Have Fun!

APPENDIX J

NETIQUETTE

Put simply, 'Netiquette' is Internet etiquette -- the informal rules of behaviour for the Internet. Netiquette guidelines help the Internet to be a more civil place to communicate and share ideas.

The following are some guidelines for communicating on the Online BBS:

- Keep messages brief and to the point.
- Use upper and lower case as grammar dictates. Avoid using all capital letters in a message as this is known as SHOUTING and is generally frowned upon.
- Read the postings regularly.
- Get into the practice of posting and responding to messages.
- Edit the original message in a reply by deleting all the unnecessary parts of the previous message. Include only the relevant information to which you are responding.
- A short note will make the post much more efficient and also much more likely to be read.
- Remember that postings and e-mail are not necessarily private. Your message can be forwarded to many people without your knowledge. In addition, most e-mail servers have programs that archive the e-mail messages that they handle.
- Before sending a message, read it over, make sure it's what you want to say, and double-check the recipient(s).
- Do not flame (write heated or angry responses), spam (send junk mail or advertisements) or post chain letters.
- Privacy and confidentiality are not new issues for nurses. The same ethical code of practice is expected when using the Online Bulletin Board System (BBS).
- Nurses must protect confidentiality on the Internet by maintaining patient and institutional privacy and refraining from unfavorable remarks about patients, colleagues, or institutions.
- Writers must not include identifying information when discussing patient cases, such as patient names, or any other characteristics that would make identification possible.
- Messages regarding patients should be written and presented as case studies.
- Other appropriate types of postings include responding to case studies, listing appropriate resources, and recommending other Online sites and resources with appropriate information.
- Finally, your password helps to maintain a secure site and should never be shared.
- Once you are finished using the Online BBS always logoff.

APPENDIX K

EDUCATIONAL PACKAGE

HOW TO USE THE INTERNET AND ONLINE BULLETIN BOARD SYSTEM

PUPROSE OF SESSION/OBJECTIVES

- The purpose of this course is to convey the basics of how to use the Internet and Online Bulletin Board System (BBS).
- The objectives for this course are as follows:
    1. To become familiar with GPEP's Website and how to navigate around it.
    2. To understand and practice Netiquette.
    3. To know how to access the Online BBS with your user name and login password.
    4. To become familiar with posting and responding to messages on the Online BBS.
- The success of the Online BBS depends on you! Please check the Online BBS often.

For the purposes of this class, we will be using Netscape Navigator to browse the web. An alternate browser that can be used is Explorer. If you have access to the Internet, one of these two browsers should be on your computer. If it is not, please contact me.

If you have questions or need clarification at any time during the class, please let me know. Encountering and overcoming problems together is the best way to learn how to use the Internet.

Starting Netscape Navigator

This computer is automatically connected to the Internet. However, for those of you who will be using the computer from home, you will need to make a connection, or dial up your local Internet Service Provider first (ISP). Again, if you need technical support for getting on line during the duration of this project, you can contact me.

Double click on the *Netscape Navigator* icon found on your desktop (the first screen that appears once you start and logon to your computer). It is the screen with all the icons on it.


Netscape.lnk

The icon *Netscape Navigator* icon should look similar to this.
Or, click once on the start button located at the bottom of your desktop and drag the pointer to the Netscape Icon and click once.

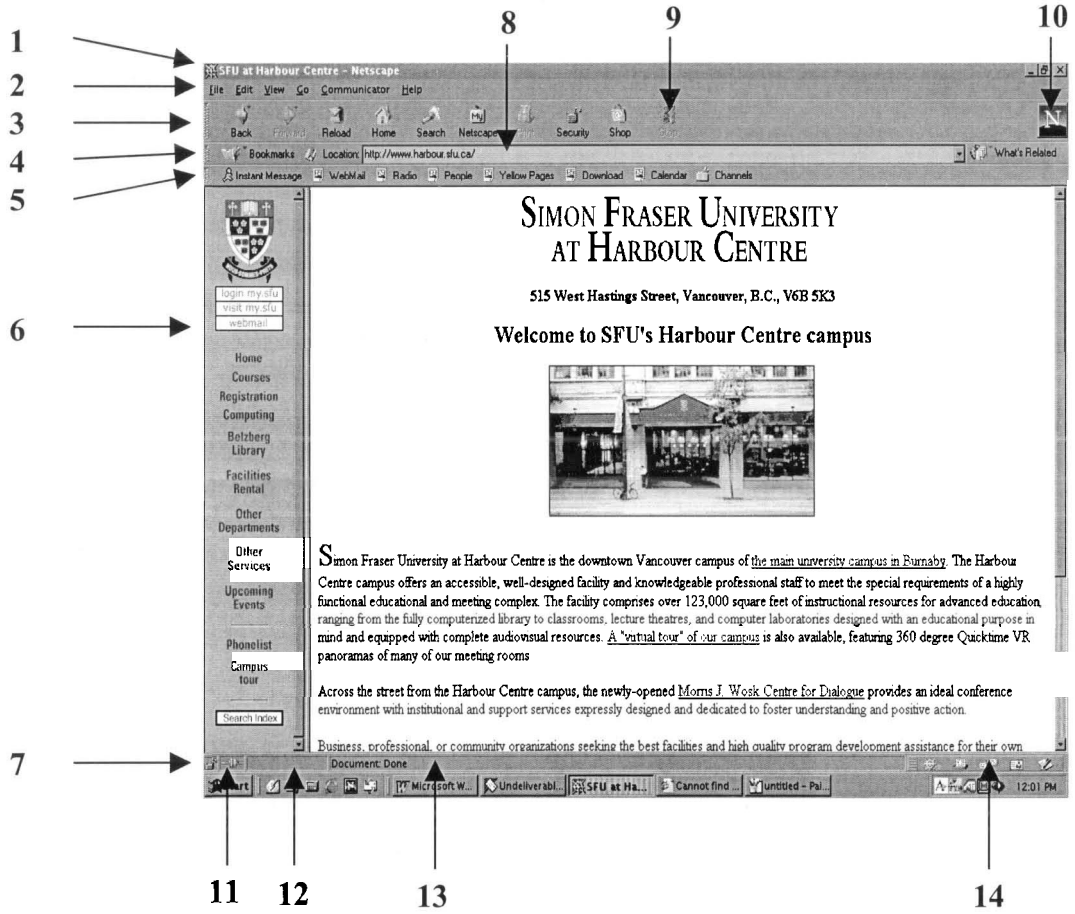
Once *Netscape Navigator* has fully loaded, you will be presented with the currently defined **Home** location. In this computer lab, the home page is *Simon Fraser University at the Harbour Centre* (http://www.harbour.sfu.ca/)

NETSCAPE NAVIGATOR'S MAIN SCREEN

As with all Windows software packages, the *Netscape Navigator* screen has a title bar, main menu and tool bar at the top of the screen, a status bar at the bottom of the screen, and when required, scroll bars on the right and just above the status bar.

Two areas of the screen shown below that are not common to other Windows packages but are important features to the *Netscape Navigator* screen are:

1. The **Location Toolbar** which shows the **URL** (Uniform Resource Locator) or 'address' of the current page. The diagram below shows the URL of the Simon Fraser University at the Harbour Centre homepage -- http://www.harbour.sfu.ca/.
2. The **Personal Toolbar** which provide quick access to commonly used functions, all of which are also accessible through the main menu system.



1 = Title Bar
2 = Main Menu
3 = Navigation Toolbar
4 = Location Toolbar
5 = Personal Toolbar
6 = Display Area
7 = Indicates if page is encrypted (closed lock) or unencrypted (open lock)
8 = URL of Current Page
9 = Click to stop loading current page
10 = Animated logo indicates that a transfer is in progress
11 = Indicates whether you are on or offline
12 = Illustrates a transfer's in progress
13 = Status Bar shows a link's URL or transfer is in progress
14 = Component Bar

NAVIGATING THE WORLD WIDE WEB

Most of the information on the World Wide Web is organized in pages that are linked to each other. Pages are located on different computers that are connected to the Internet. When you tell Navigator that you want to look at a particular page, it sends a request for that page to the other computers on the Internet. The network of computers passes the request to the computer storing the page that you want to see. That computer receives your request, finds the page, and responds by sending you a copy of the page over the Internet. When the page arrives at your computer, Navigator displays it in the browser window.

The computer that sends you a copy of the page is usually a larger, more powerful computer called a server. When Navigator receives the page and displays it, it is acting as a client, sending requests for pages and displaying them on your behalf. Some pages are divided into rectangular areas called frames. Each frame contains a separate page. To look at another page, you can:

- Click a link on a page (also called a hyperlink)

Type a URL in the Location field

What is a URL?

URL has been mentioned a few times now, and it is important to look at what a URL is.

- URL stands for Uniform Resource Locator.
- It is an addressing scheme and a way to identify resources available on the WWW.
- URL's represent a standardized addressing scheme for Internet resources, and helps users locate the resource by indicating exactly where they are.
- The basic structure of a URL is hierarchical, and the hierarchy moves from left to right.

protocol://server-name.domain-name.top-level domain:port/directory/filename
i.e. http://www.gpep.ca

NOTE: it is necessary to be precise and type in the exact address (URL) when accessing a site. If the web address is unknown, it will be necessary to use a search engine such as www.yahoo.com or www.google.com in order to search for the appropriate address (URL).

Typing a URL

Most of the time, you won't need to know a page's URL because it's included as part of a link. But increasingly, you see URLs on business cards, in magazine, newspaper articles and in advertisements. You might have to type the specific URL of a page you want to view if you can't get to the page by clicking on a link.

To go to a page by entering its URL:

1. Click in the Location (sometimes called "Netsite") field.
2. Type the page's URL.
3. Press Enter.

Tips:

- Make sure that the locator field is clear before entering the new URL.
- To clear the locator field:
    1. Highlight the current address by holding down the left mouse button.
    2. Drag mouse over the text with which you would like to delete.
    3. Once all of the text is highlighted (usually in blue), hit the Delete key.
    4. If the URL begins with http://, you can leave off this part of the URL and Navigator will automatically add it.

ACTIVITY 1: Type **www.gpep.ca** into the location field. This will take you to the Geropsychiatric Education Program's homepage, and will allow you to become more familiar with GPEP's web site while working through the other exercises.

What is a Link?

- A link contains the address (URL) of the page you want to see. When you click the link, Navigator gets a copy of the page and displays it on your computer.
- A link may show up as a **highlighted** and/or underlined word (usually a different colour than the rest of the text), a picture/graphic, or an icon.
- When moving the mouse over a link, the pointer ↗ will turn into a grabbing hand.
- Another way of determining whether something is a link is to move your mouse pointer over the word or picture and check the status bar at the bottom of the screen.
- If it *is* a link, you will see an address or URL displayed on the status bar. If it *is not* a link, the display on the status bar will not change.
- When you click on a link with your mouse, you will be taken to the page the link represents.

Link options on GPEP's '*Homepage*' include:

- Home
- V/RHB
- Search
- Sitemap

} Indicated by the purple buttons at the top of the screen

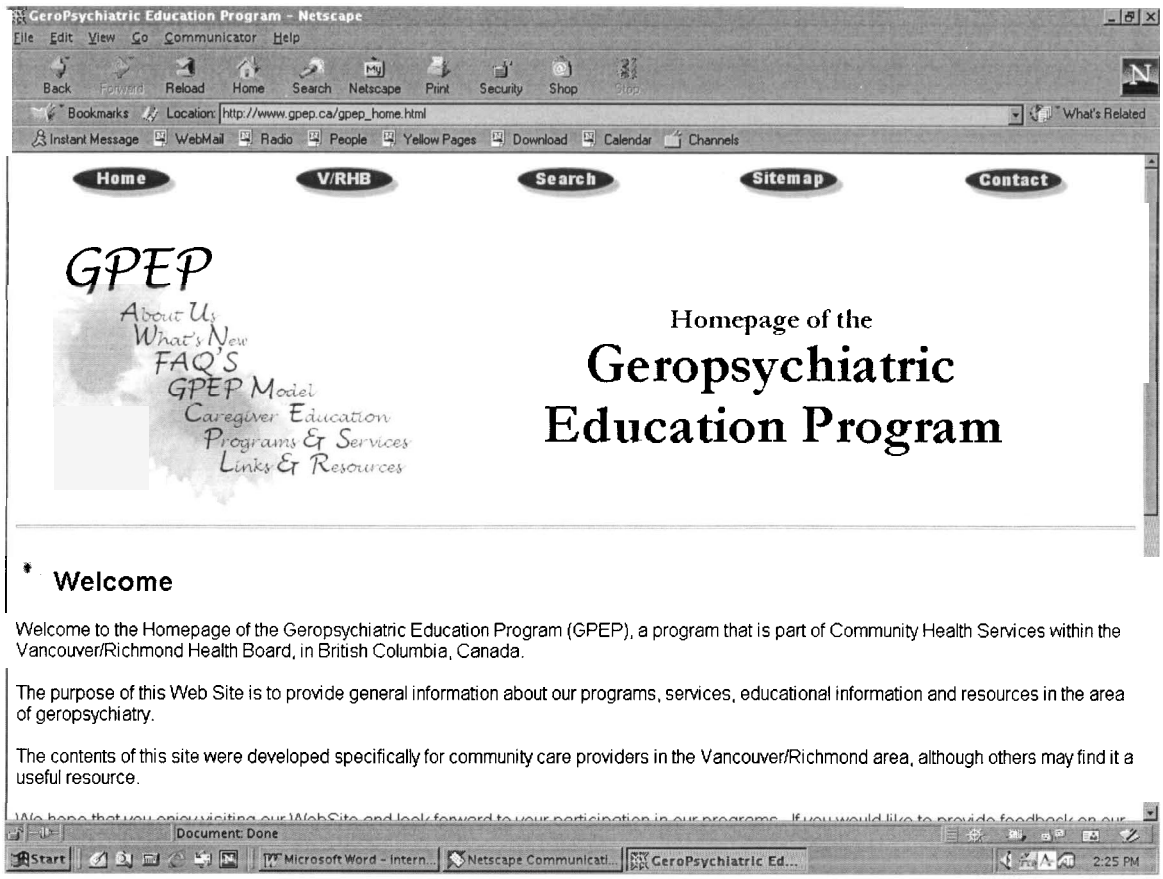
- Contact

- About Us
- What's New
- FAQ's
- GPEP Model
- Programs & Services
- Links & Resources

} Indicated by the words written on the sunflower

- GPEP's Online Website Feedback Form
- Back to top

} Indicated by words underlined in purple



ACTIVITY 2: Move the mouse over 'About Us' at the top of GPEP's homepage. What happens to the status bar? Now, click on 'About Us'. What happens? Identify **ALL** of the links on the 'About Us' page. How many are there?

KEEPING TRACK OF WHERE YOU'VE BEEN

- Navigator lets you quickly return to pages you've already seen during the current session.

Returning to a specific page

- To see the list of pages you've previously visited (called a history list):
  1. Click on 'Communicator' located in the main menu.
  2. Move the pointer over 'Tools'
  3. Drag the mouse over to 'History' and click the left mouse button.
  4. A list will be displayed of all the pages you've visited during the current and previous sessions.
  5. To return to a specific page, double-click its entry in the 'History' window.

- Communicator also keeps track of the most recent pages you visited at the bottom of the 'Go' menu.

- However, when you quit Communicator, Communicator discards the history list from the bottom of the 'Go' menu.

Moving between pages you've already seen

⇨ Click the 'Forward' button to display the next page in the history list.

⇦ Click the 'Back' button to return to the previous page in the history list.

NOTE: Forward is only available after you click 'Back' or click a page in the history list.

ACTIVITY 3: Hold down the 'Back' button to see a menu of the pages that you can go back to. List the top three (0-2) pages under the 'Back' button. Go back to GPEP's homepage by clicking on the page listed under the 'Back' button. Now, hold down the 'Forward' button. List the top three (0-2) pages under the 'Forward' button.

Creating bookmarks

- Before long, you will have found many web sites that you will want to return to regularly. Rather than having to access them in what may have been a rather confusing route, you can create a **Bookmark** – or marker – which will enable you to go directly to each site the next time you want to use it.

To create a Bookmark:

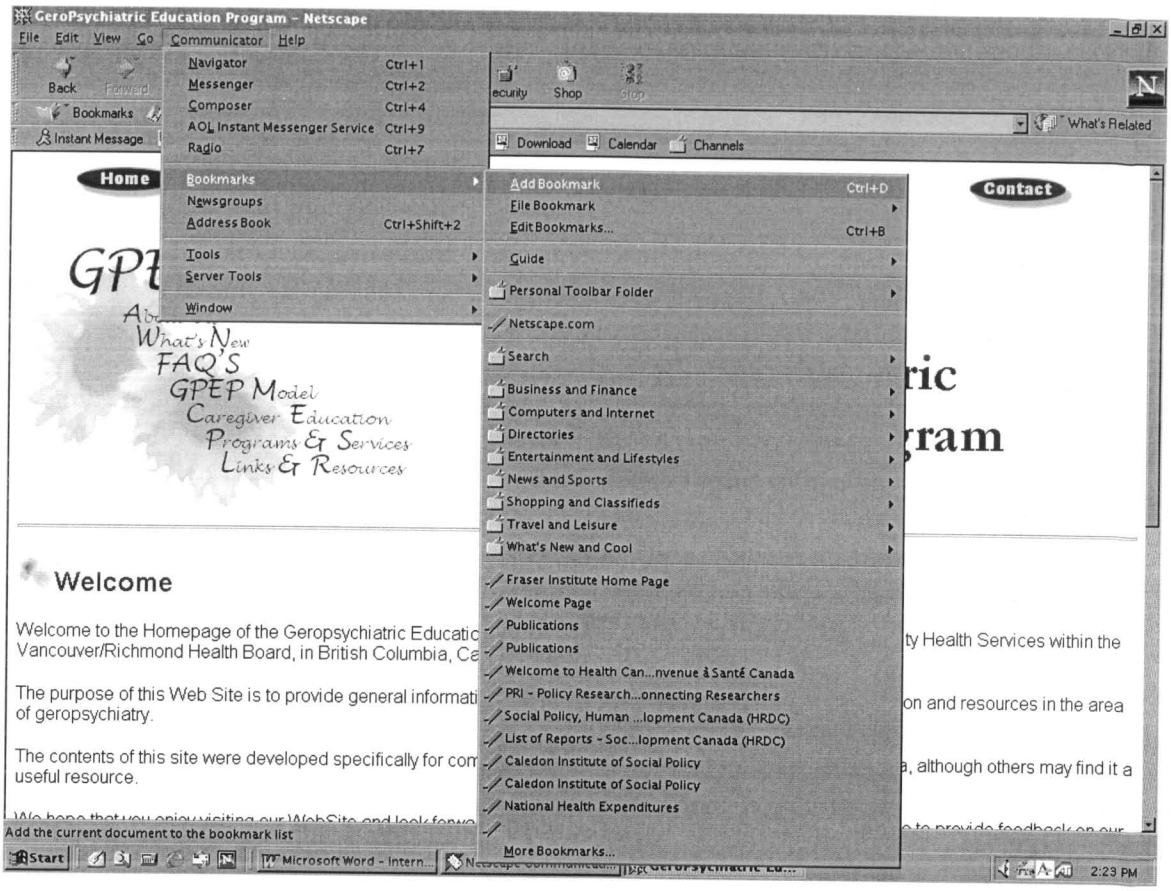
1. With the site you want marked currently on the screen, click on 'Communicator' in the main menu.
2. Select 'Bookmarks' in the drop down menu.
3. Drag the mouse over to 'Add Bookmark' and click.

Now, when you open 'Communicator' and select 'Bookmark', you will see your new bookmark listed. Bookmarks can be categorized into the existing folders, or left as files at the bottom of the 'Bookmarks' menu.

To use an existing Bookmark:

1. Select 'Communicator' in the main menu.
2. Select 'Bookmark' from the list of options.
3. Drag the mouse over to the file you would like to open.
4. Click on the bookmark you want to access.

ACTIVITY 4: Using the above instructions, **bookmark** GPEP's homepage. Then, go to GPEP's web site by accessing the new bookmark.



Printing a page

1. Go to the page you want to print.
2. From the main menu, choose 'Print' or click the 'Print' button in the Navigation toolbar.
3. Choose the printing options you want.
4. Click 'OK'.

NOTE: Some pages are divided into frames, which are rectangular areas that display their own pages. When printing a page containing frames, the 'Print Frame' command replaces the 'Print' command. To select the frame you want to print, click anywhere inside the frame. From the 'File' menu, choose 'Print Frame' to print the page of the currently selected frame.

OVERVIEW OF NETSCAPE NAVIGATOR'S MAIN MENU, TOOLBAR BUTTONS

Main Menu

Menu Item	Description
File	Items related to opening, saving, printing, and exiting
Edit	Standard Windows items – undo, cut, copy, paste, find, and preferences (e.g. your 'home' location, e-mail information, the layout of *Netscape Navigator's* main screen, etc.)
View	Items related to displaying images, refreshing the screen, and looking at the 'source code' for the web page
Go	Items related to moving around, plus a 'history' list (web pages accessed during the current session)
Communicator	Used to access other *Netscape* applications such *as Netscape Navigator & Composer,* your address book, tools such as history, and add and manipulate bookmarks
Help	Contains a number of ways to get help, from an Online tutorial to how to create your own web service

Tool Bar Icons

Icon	Purpose
Back	Clicking on this button takes you back to the previously selected web page
Forward	Clicking on this button takes you forward one (previously selected) web page
Reload	Clicking on this button results in the current web page being reloaded (similar to refreshing the screen)
Home	Clicking on this button takes you back to the *Homepage* identified on the *Appearance* tab (found under *Preferences* on the *Edit* menu)
Search	This button can be used to search for (i.e. find) a particular web site or topic on the Internet
My Netscape	Allows you to create and link to your own personal page
Print	Clicking on this button causes the current web page to be printed on the default printer defined under windows
Security	Tells you whether or not the site is encrypted
Shop	Allows you to shop Online
Stop	Clicking on this button will cause *Netscape Navigator* to stop trying to load the currently selected address

NETIQUETTE

Put simply, 'Netiquette' is Internet etiquette -- the informal rules of behaviour for the Internet. Netiquette guidelines help the Internet to be a more civil place to communicate and share ideas.

The following are some guidelines for communicating Online:

- Keep messages brief and to the point.
- Use upper and lower case as grammar dictates. Avoid using all capital letters in a message as this is known as SHOUTING and is generally frowned upon.
- Read the postings regularly.
- Get into the practice of posting and responding to messages.
- Edit the original message in a reply by deleting all the unnecessary parts of the previous message. Include only the relevant information to which you are responding.
- A short note will make the post much more efficient and also much more likely to be read.
- Remember that postings and e-mail are not necessarily private. Your message can be forwarded to many people without your knowledge. In addition, most e-mail servers have programs that archive the e-mail messages that they handle.
- Before sending a message, read it over, make sure it's what you want to say, and double-check the recipient(s).
- Do not flame (write heated or angry responses), spam (send junk mail or advertisements) or post chain letters.
- Privacy and confidentiality are not new issues for nurses. The same ethical code of practice is expected when using the Online Bulletin Board System (BBS).
- Nurses must protect confidentiality on the Internet by maintaining patient and institutional privacy and refraining from unfavorable remarks about patients, colleagues, or institutions.
- Writers must not include identifying information when discussing patient cases, such as patient names, or any other characteristics that would make identification possible.
- Messages regarding patients should be written and presented as case studies.
- Other appropriate types of postings include responding to case studies, listing appropriate resources, and recommending other Online sites and resources with appropriate information.
- Finally, your password helps to maintain a secure site and should never be shared.
- Once you are finished using the Online BBS remember to logoff.

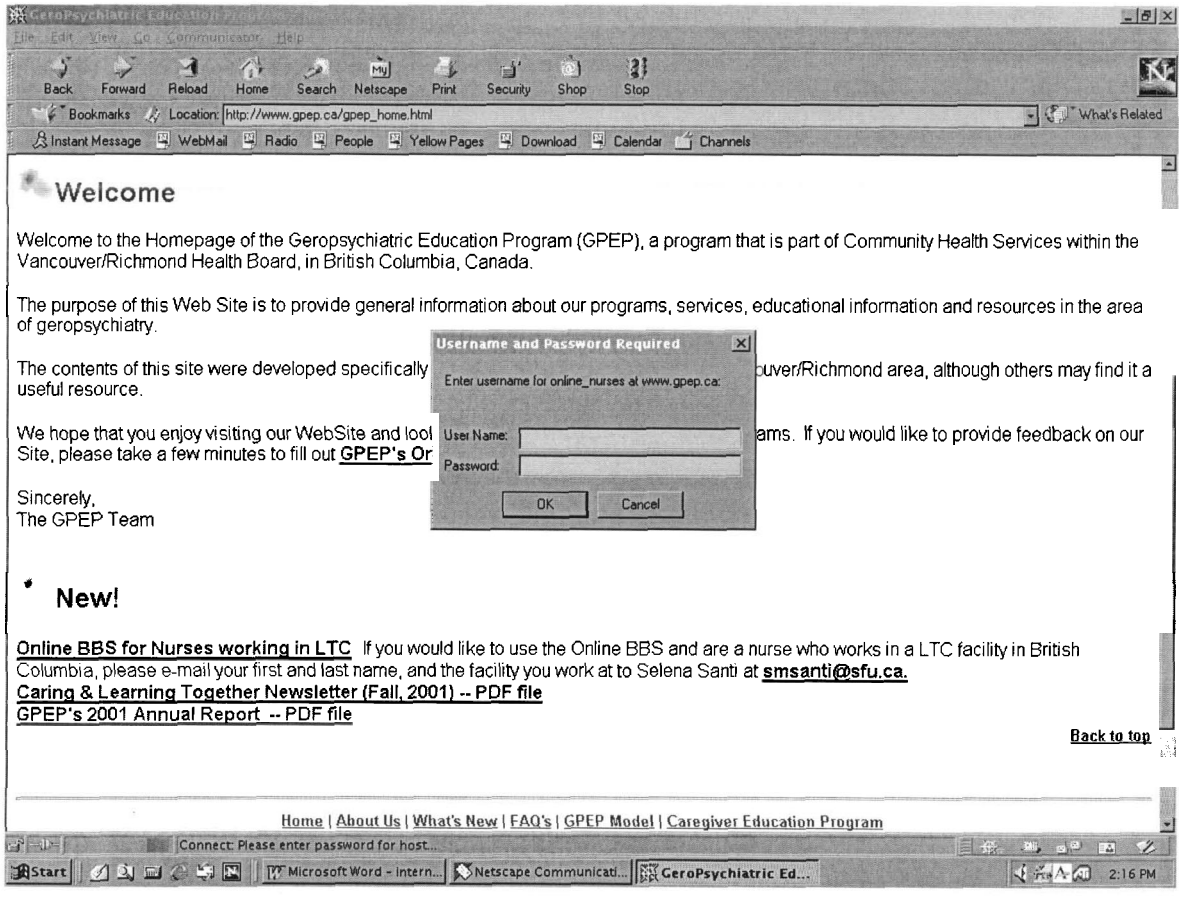
USING THE ONLINE BBS

What is an Online BBS?

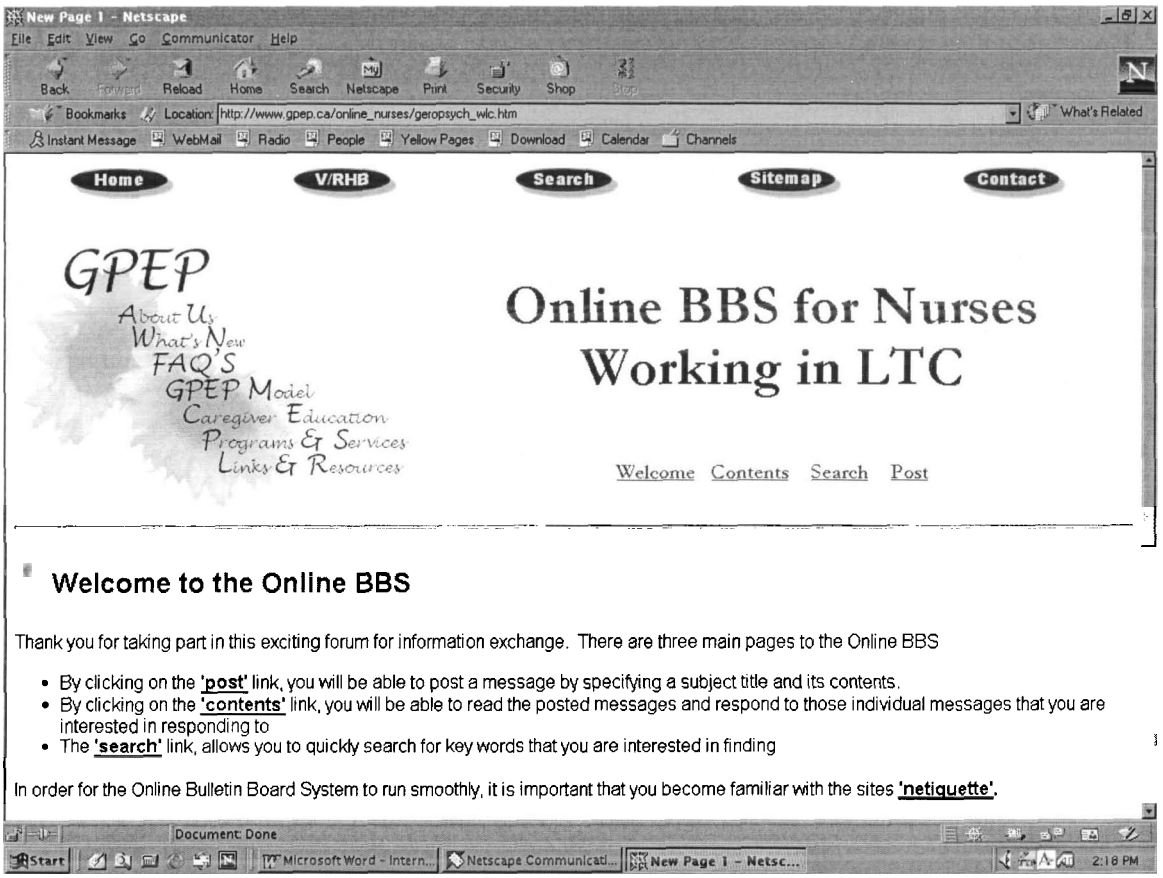
- An Online BBS is an Internet forum that allows you to post, read and respond to messages.
- For the purposes of this project, the Online BBS is being used as a forum to network with and support your peers through posting messages, case studies, and useful web and paper based resources.

Getting Started:

- On GPEP's homepage (www.gpep.ca), under NEW! is a link to the Online BBS.
- Click on the link that says: Online BBS for Nurses Working in LTC.
- A box should appear that asks you for your user name and password. Your user name is the first initial of your first name followed by your last name.
- Your password is your first name.



ACTIVITY 5: Enter your user name and password. Once you have done this you should be on the 'Welcome Page' of the Online BBS.

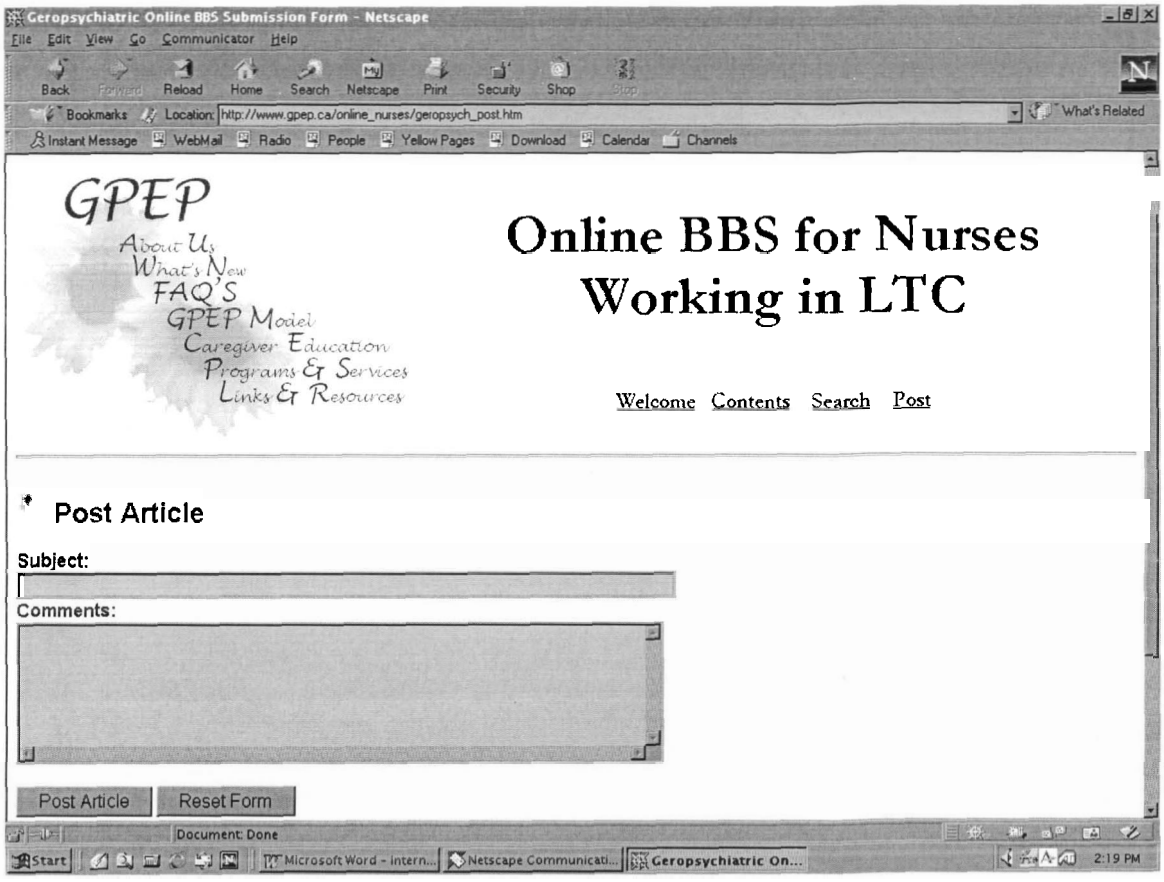


There are 4 main pages to the Online BBS:

- **Welcome Page:** Gives a brief introduction on how to post and respond to articles. Contains links to the 'search page', 'contents page', and 'posting page' of the Online BBS. It also contains a link to the sites 'netiquette'.
- **Contents Page:** Has a listing of all recent postings according to subject title, date and time.
- **Search Page:** This feature allows you to search the articles posted to the Online BBS for key words or phrases. Use this feature to find postings easily.
- **Posting Page:** This page allows you to post a message. You will be asked to enter a 'Subject Title' and a message under 'Content'.

To Post a Message:

- Click on the 'Post' link.
- In the subject line, enter a brief description of the subject/title of your message
- Keep the subject to a few words
- In the 'Comments' box write the text of your message. Your message can take place in the form of a question, comment, or case study.
- Once you are finished typing the message, click on the 'Post Article' button.



- Once you have posted the article, a message will appear confirming that your message has been posted to the 'Contents' page.
- The 'Confirmation' page also contains a link to the 'Contents' page so you can view your posting.

ACTIVITY 6: Click on the link that takes you to the 'Post' page. Enter a subject and a brief comment. Then click on the 'Post Article' button. A confirmation page will appear.

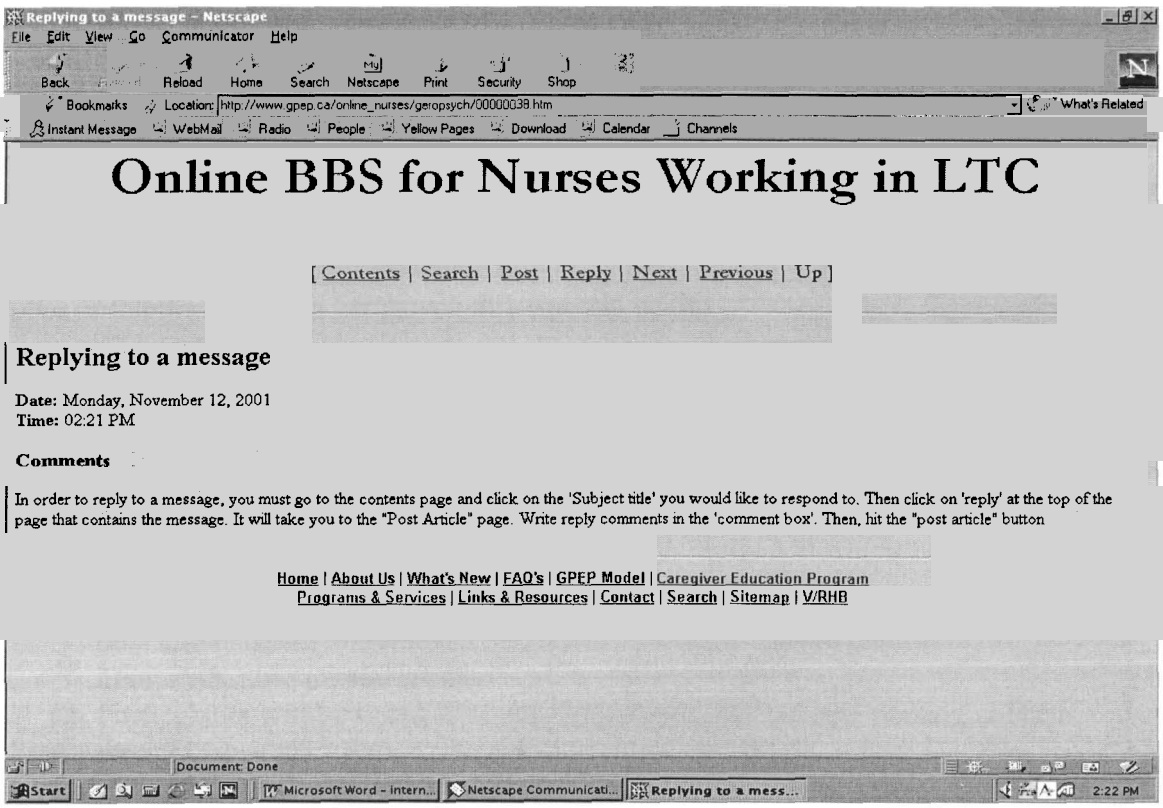
To Read a Message:

- Click on the 'Contents' page link.
- A list of articles should appear according to subject, date and time.
- Click on the message that you would like to read and the contents of that message will appear.
- While viewing the article, you have the option of posting a new article, viewing the previous and following message, or replying to the message.

ACTIVITY 7: Click on the 'Contents' page link. Click on an article you would like to read. The full contents of the message will appear.

To Reply to a Message:

- Follow the above directions on how to read a message.
- Once you have selected the message you would like to reply to, click on the 'Reply' link at the top of the page.
- It will take you to the 'Post' message page.
- Once you enter your reply hit the 'Post Article' button.



ACTIVITY 8: Now that you are reading a message. Click on the 'Reply' link. Reply to the message. Once you are done, hit the 'Post Article' button. Go back to the 'Contents' page. How does the article appear?

Congratulations for completing this Internet course!

If you have any questions or need technical support during this study, please e-mail me at smsanti@sfu.ca. There is a link to my e-mail address on the Online BBS Welcome Page.

APPENDIX L

REVISED RECRUITMENT POSTER

HERE IS YOUR CHANCE TO PARTICIPATE IN AN INTERACTIVE ONLINE NURSING EDCUATION EXPERIENCE!

Master's of Arts in Gerontology student from Simon Fraser University, Vancouver, BC, is looking for Registered Nurses (RNs) who work in LTC to participate in a thesis project.

Purpose: to determine the value of using an Online Bulletin Board System (BBS) in meeting nurses' needs for information, networking and collegial support.

Online BBS: an Internet forum where nurses can post questions, share information, and solve problems related to geropsychiatric mental health.

Benefits of Participating:

- Gain access to valuable information related to geropsychiatric mental health.
- Forum a community/network of professionals interested in geriatric mental health.
- Support others and be supported through the sharing of clinical information.

Involvement:

- Over a *three-month* period, Online BBS participants will have the opportunity to post and respond to questions, resources, and case studies pertaining to geropsychiatric mental health.
- Participants will be asked to check the Online BBS for new posting at least weekly.
- All participants will receive a pretest and posttest questionnaire.

All Interested Participants:

- Call me at (604) 733-5318, or e-mail me at smsanti@sfu.ca with your first and last name, phone number, and facility address so I can mail you the pretest questionnaire and set up your user name and password for the Online BBS.
- For those without Internet access, your participation is also needed in filling out the prettest and posttest questionnaire. Please specify that you do not have access when contacting me.

- All participants will be entered into a draw for a chance to win a $50.00 gift certificate to Chapters.

Thank you for your interest in this study.

Selena Santi
M.A. in Gerontology Candidate, Simon Fraser University

APPENDIX M

REVISED INFORMATION SHEET

HERE IS YOUR CHANCE TO PARTICIPATE IN AN INTERACTIVE ONLINE NURSING EDUCATION EXPERIENCE!

Master's of Arts in Gerontology student from Simon Fraser University, Vancouver, BC, is looking for Registered Nurses to participate in a thesis project.

Purpose: to determine the value of using an Online Bulletin Board System (BBS) in meeting nurses' needs for information, networking and collegial support.

Online BBS: an Internet forum where nurses can post questions, share information and solve problems related to geropsychiatric mental health.

Benefits of Participating:

- Gain access to valuable information related to geropsychiatric mental health.
- Form a community/network of professionals interested in geriatric mental health.
- Support others and be supported through the sharing of clinical information.

Involvement:

- Over a *three-month* period, Online BBS participants will have the opportunity to post and respond to questions, resources, and case studies pertaining to geropsychiatric mental health.
- All participants will receive a pretest and posttest questionnaire.

All Interested Participants:

With Internet Access:

- Call me at (604) 733-5318, or e-mail me at smsanti@sfu.ca with your first and last name, phone number, and facility address so I can mail you the pretest questionnaire and set up your user name and password for the Online BBS.
- Fill out the enclosed consent form and questionnaire and fax or mail to the following address by *Friday, December 14, 2002.*

Without Internet Access:

- Fill out the enclosed questionnaire and consent form and fax or mail to the following address by *Friday, December 14, 2002.*

Attention: Selena Santi
Geropsychiatric Education Program
#228 – 1195 West Broadway
Vancouver, BC V6H 3X5
Facsimile: (604) 739-9041

Thank you for your interest in this study.

Selena Santi
M.A. in Gerontology Candidate, Simon Fraser University

APPENDIX N

REMINDER LETTER MAILED TWO MONTHS INTO STUDY

March 13, 2002

Dear Nurses:

This is just a reminder that the Online Bulletin Board System for my thesis titled "*Online Bulletin Board Systems: An Effective Resource for Geropsychiatric Nurses Working in Long Term Care?*" is still up and running. Due to unforeseen methodological changes, the time the Online BBS will be up and running has been extended until the end of April, at which time you will be receiving the follow-up questionnaire.

Just as a reminder, the Online BBS can be accessed by going to www.gpep.ca. Scroll down to the section titled 'New' on the homepage, then click on the link titled, Online Bulletin Board System for Nurses Working in LTC. After clicking on this link, you will be prompted to enter your user name and password which are as follows:

User Name:
Password:

Please look at the attached sheet for directions as to how to log on and use the Online BBS as well as for the sites Netiquette.

Please note that your involvement in the Online BBS is imperative in order for it to be a success!!! Please check the Online BBS at least weekly for new postings, information, and resources.

If you have any further questions with how to access the Online BBS, or if you have any questions regarding my thesis, please call me at (604) 733-5318 or e-mail me at smsanti@sfu.ca.

Thank you again for your interest and participation in this study. I hope that you continue to see this as a worthwhile endeavour.

Sincerely,

Selena Santi
M.A. in Gerontology Candidate
Simon Fraser University
Vancouver, BC

APPENDIX O

POSTTEST COVER LETTER FOR INTERVENTION GROUP

April 24, 2002

Dear Nurses,

This letter is to inform you that the data collection phase of my Master's of Arts thesis titled, "*Online Bulletin Boards: An Effective Resource for Geropsychiatric Nurses Working in Long-Term Care?*" is quickly coming to an end. The final phase will consist of participants completing the enclosed post-test questionnaire.

I understand that it is a chaotic time for healthcare providers in British Columbia due to the current restructuring of the healthcare system. I very much appreciate your participation in this study considering the present circumstances; however, an extensive evaluation of the Online BBS depends on you. Please take the time to **fully complete** the enclosed questionnaire and provide comments on the open-ended questions. Please mail or fax your completed questionnaire by **Friday, May 10, 2002.**

Your user name and password for logging on to the Online BBS will remain active until the completion of my thesis in August 2002. Only articles posted up to May 10, 2002 will be analyzed for major themes and included in my thesis. At the conclusion of my thesis, the results of the study will be discussed with the Geropsychiatric Education Program (GPEP). If the Online BBS proves to be a beneficial tool for information exchange, networking and support, it will be expanded for all healthcare providers to use.

I would like to thank you again for participating in this study which is a requirement for completing my Master's of Arts in Gerontology. If you have any questions regarding the questionnaire or the Online BBS please contact me at (604) 733-5318 or e-mail me at smsanti@sfu.ca.

A summary of results will be mailed to all participants in the Fall of 2002.

Sincerely,

Selena Santi
M.A. in Gerontology Candidate
Simon Fraser University
Vancouver, BC

APPENDIX P

POSTTEST COVER LETTER FOR CONTROL GROUP

June 13, 2002

Dear Nurses,

This letter is to inform you that the data collection phase of my Master's of Arts thesis titled, "*Online Bulletin Boards: An Effective Resource for Geropsychiatric Nurses Working in Long-Term Care?*" is quickly coming to an end. The final phase will consist of participants completing the enclosed post-test questionnaire.

Please take the time to **fully complete** the enclosed questionnaire and return it by Friday, June 21, 2002.

At the conclusion of my thesis, the results of the study will be discussed with the Geropsychiatric Education Program (GPEP). If the Online BBS proves to be a beneficial tool for information exchange, networking and support, then it will be expanded for all healthcare providers to use.

I would like to thank you in advance for participating in this study which is a requirement for completing my Master's of Arts in Gerontology. Please contact me at (604) 733-5318 or e-mail me at smsanti@sfu.ca if you have any questions regarding my study.

A summary of the results will be mailed to all participants in the Fall of 2002.

Sincerely,

Selena Santi
M.A. in Gerontology Candidate
Simon Fraser University
Vancouver, BC

APPENDIX Q

INTERVENTION GROUP POSTTEST QUESTIONNAIRE

NURSES INFORMATION NEEDS AND RESOURCE SURVEY

Attention: Selena Santi
Geropsychiatric Education Program (GPEP)
#228-1195 West Broadway
Vancouver, BC V6H 3X5
Facsimile: (604) 739-9041

Thank you for taking the time to complete this survey. The information you provide will remain confidential and will be used to understand the effectiveness of an Online Bulletin Board System in meeting your information needs. Please read each of the following questions and indicate your response by either placing an 'X' in the appropriate box, circling the appropriate number, or by filling in the blank spaces provided (please print clearly). Unless otherwise specified, **please mark only one response per question.** We look forward to receiving your **completed questionnaire by Friday, May 10, 2002.** Please fax or mail your completed questionnaire to the above address.

PART A: Information Needs & Access

1. Over the past **three months**, how **often** did you need information on the following topics? (Please circle the appropriate numbers)

	Never	Once every few months	At least once a month	Once every few weeks	A few times a week or more
a) Drug therapy and interactions	1	2	3	4	5
b) Addressing complex diagnoses	1	2	3	4	5
c) Knowing when to refer	1	2	3	4	5
d) Physical assessments	1	2	3	4	5
e) Skin care & wound management	1	2	3	4	5
f) Effective communication techniques	1	2	3	4	5
g) Signs, symptoms, & treatment of depression	1	2	3	4	5
h) Signs, symptoms, & treatment of dementia	1	2	3	4	5
i) Signs, symptoms, & treatment of delirium	1	2	3	4	5
j) Dealing with challenging behaviours	1	2	3	4	5
k) Psychological assessments	1	2	3	4	5
l) Providing palliative care	1	2	3	4	5
m) Monitoring wandering behaviours	1	2	3	4	5
n) Infectious diseases	1	2	3	4	5
o) Dealing with families	1	2	3	4	5
p) Coping with grief and loss	1	2	3	4	5
q) Other (please specify) _____ _____	1	2	3	4	5

2. Over the past **three months**, how **well** were your information needs met in the following areas? (Please circle the appropriate numbers)

		Not at all									Extremely well
a)	Drug therapy and interactions	1	2	3	4	5	6	7	8	9	10
b)	Addressing complex diagnoses	1	2	3	4	5	6	7	8	9	10
c)	Knowing when to refer	1	2	3	4	5	6	7	8	9	10
d)	Physical assessments	1	2	3	4	5	6	7	8	9	10
e)	Skin care & wound management	1	2	3	4	5	6	7	8	9	10
f)	Effective communication techniques	1	2	3	4	5	6	7	8	9	10
g)	Signs, symptoms, & treatment of depression	1	2	3	4	5	6	7	8	9	10
h)	Signs, symptoms, & treatment of dementia	1	2	3	4	5	6	7	8	9	10
i)	Signs, symptoms, & treatment of delirium	1	2	3	4	5	6	7	8	9	10
j)	Dealing with challenging behaviours	1	2	3	4	5	6	7	8	9	10
k)	Psychological assessments	1	2	3	4	5	6	7	8	9	10
l)	Providing palliative care	1	2	3	4	5	6	7	8	9	10
m)	Monitoring wandering behaviours	1	2	3	4	5	6	7	8	9	10
n)	Infectious diseases	1	2	3	4	5	6	7	8	9	10
o)	Dealing with families	1	2	3	4	5	6	7	8	9	10
p)	Coping with grief and loss	1	2	3	4	5	6	7	8	9	10
q)	Other (please specify) _____ _____	1	2	3	4	5	6	7	8	9	10

3. Over the past **three months**, how **well** were the following information needs met through the use of the **Online BBS**? (Please circle the appropriate numbers)

		Not at all									Extremely well
a)	Drug therapy and interactions	1	2	3	4	5	6	7	8	9	10
b)	Addressing complex diagnoses	1	2	3	4	5	6	7	8	9	10
c)	Knowing when to refer	1	2	3	4	5	6	7	8	9	10
d)	Physical assessments	1	2	3	4	5	6	7	8	9	10
e)	Skin care & wound management	1	2	3	4	5	6	7	8	9	10
f)	Effective communication techniques	1	2	3	4	5	6	7	8	9	10
g)	Signs, symptoms, & treatment of depression	1	2	3	4	5	6	7	8	9	10
h)	Signs, symptoms, & treatment of dementia	1	2	3	4	5	6	7	8	9	10
i)	Signs, symptoms, & treatment of delirium	1	2	3	4	5	6	7	8	9	10
j)	Dealing with challenging behaviours	1	2	3	4	5	6	7	8	9	10
k)	Psychological assessments	1	2	3	4	5	6	7	8	9	10
l)	Providing palliative care	1	2	3	4	5	6	7	8	9	10
m)	Monitoring wandering behaviours	1	2	3	4	5	6	7	8	9	10
n)	Infectious diseases	1	2	3	4	5	6	7	8	9	10
o)	Dealing with families	1	2	3	4	5	6	7	8	9	10
p)	Coping with grief and loss	1	2	3	4	5	6	7	8	9	10
q)	Other (please specify) _____ _____	1	2	3	4	5	6	7	8	9	10

4. Did you have any additional information needs, apart from the above, that were met through the use of the Online BBS? (Please check the appropriate box and provide an explanation)
   a) ☐ No
   b) ☐ Yes

   Please explain. _____

   _____

   _____

   _____

   _____

PART B: Information Resources

1. Over the past **three months**, how **often** did you use the resources listed below to learn more about how to meet the specific needs of your clients? (Please circle the appropriate numbers)

	Never	Once every few months	At least once a month	Once every few weeks	A few times a week or more
a) General Practitioner (GP)	1	2	3	4	5
b) Medical Coordinator	1	2	3	4	5
c) Head Nurse	1	2	3	4	5
d) Other Nurses at work	1	2	3	4	5
e) Nurses outside of work	1	2	3	4	5
f) Health Unit Facility Liaisons	1	2	3	4	5
g) Text books	1	2	3	4	5
h) Journal articles	1	2	3	4	5
i) Pharmacists	1	2	3	4	5
j) Consultation with Clinical Nurse Specialists	1	2	3	4	5
k) Consultation with Health Educators	1	2	3	4	5
l) Consultation with Mental Health Team	1	2	3	4	5
m) Newsgroups/Listserves	1	2	3	4	5
n) Online Bulletin Boards	1	2	3	4	5
o) Websites	1	2	3	4	5
p) Inservices	1	2	3	4	5
q) Clinical Updates	1	2	3	4	5
r) Conferences	1	2	3	4	5
s) Other (please specify) _____ _____	1	2	3	4	5

2. Over the past **three months**, how **helpful** did you find the information obtained from the resources listed below? (Please circle the appropriate numbers)

		Not at all helpful									Extremely helpful
a)	General Practitioner (GP)	1	2	3	4	5	6	7	8	9	10
b)	Medical Coordinator	1	2	3	4	5	6	7	8	9	10
c)	Head Nurse	1	2	3	4	5	6	7	8	9	10
d)	Other Nurses at work	1	2	3	4	5	6	7	8	9	10
e)	Nurses outside of work	1	2	3	4	5	6	7	8	9	10
f)	Health Unit Facility Liaisons	1	2	3	4	5	6	7	8	9	10
g)	Text books	1	2	3	4	5	6	7	8	9	10
h)	Journal articles	1	2	3	4	5	6	7	8	9	10
i)	Pharmacists	1	2	3	4	5	6	7	8	9	10
j)	Consultation with Clinical Nurse Specialists	1	2	3	4	5	6	7	8	9	10
k)	Consultation with Health Educators	1	2	3	4	5	6	7	8	9	10
l)	Consultation with Mental Health Team	1	2	3	4	5	6	7	8	9	10
m)	Newsgroups/Listserves	1	2	3	4	5	6	7	8	9	10
n)	Online Bulletin Boards	1	2	3	4	5	6	7	8	9	10
o)	Websites	1	2	3	4	5	6	7	8	9	10
p)	Inservices	1	2	3	4	5	6	7	8	9	10
q)	Clinical Updates	1	2	3	4	5	6	7	8	9	10
r)	Conferences	1	2	3	4	5	6	7	8	9	10
s)	Other (please specify) _____ _____	1	2	3	4	5	6	7	8	9	10

3. Overall, how useful would you are the Online BBS as an information resource tool? (Please circle the appropriate number)

1 — 2 — 3 — 4 — 5 — 6 — 7 — 8 — 9 — 10

Not at all useful … **Extremely useful**

4. Using the following scale, please circle how **helpful** you found the information obtained from the **Online BBS**. (Please circle the appropriate number)

1 — 2 — 3 — 4 — 5 — 6 — 7 — 8 — 9 — 10

Not at all helpful … **Extremely helpful**

5. Over the past **three months**, how **often** did you use the **Online BBS** as an information resource tool? (Please circle the appropriate number)

1 — 2 — 3 — 4 — 5

Never | **Once every few months** | **At least once a month** | **Once every few weeks** | **A few times a week or more**

6. On the following scale, rate how **often** you will **continue** to use the **Online BBS** as an information resource tool. (Please circle the appropriate number)

-------1----------2----------3----------4----------5-------

Never	Once every few months	At least once a month	Once every few weeks	A few times a week or more

PART C: Care Provision Efficacy

1. Over the past **three months**, how **well** do you feel you were able to provide care to your clients? (Please circle the most appropriate number)

-------1-------2-------3-------4-------5-------6-------7-------8-------9-------10-------

Not at all **Extremely well**

PART D: Networking & Support

1. Over the past **three months**, how **often** did you network with nurses who **work outside** of your facility? (Please circle the appropriate number)

-------1----------2----------3----------4----------5-------

Never	Once every few months	At least once a month	Once every few weeks	A few times a week or more

2. Over the past **three months**, how **often** did you collaborate with **nurses outside** of your facility in order to obtain information on the topics listed below? (Please circle the appropriate numbers)

		Never	Once every few months	At least once a month	Once every few weeks	A few times a week or more
a)	Drug therapy and interactions	1	2	3	4	5
b)	Addressing complex diagnoses	1	2	3	4	5
c)	Knowing when to refer	1	2	3	4	5
d)	Physical assessments	1	2	3	4	5
e)	Skin care & wound management	1	2	3	4	5
f)	Effective communication techniques	1	2	3	4	5
g)	Signs, symptoms, & treatment of depression	1	2	3	4	5
h)	Signs, symptoms, & treatment of dementia	1	2	3	4	5
i)	Signs, symptoms, & treatment of delirium	1	2	3	4	5
j)	Dealing with challenging behaviours	1	2	3	4	5
k)	Psychological assessments	1	2	3	4	5
l)	Providing palliative care	1	2	3	4	5
m)	Monitoring wandering behaviours	1	2	3	4	5
n)	Infectious diseases	1	2	3	4	5
o)	Dealing with families	1	2	3	4	5
p)	Coping with grief and loss	1	2	3	4	5
q)	Other (please specify) _____ _____	1	2	3	4	5

3. Over the past **three months**, how **often** did you use the following methods to **network** with other nurses? (Please circle the appropriate numbers)

	Never	Once every few months	At least once a month	Once every few weeks	A few times a week or more
a) Professional associations	1	2	3	4	5
b) Meetings	1	2	3	4	5
c) Educational sessions	1	2	3	4	5
d) Conferences	1	2	3	4	5
e) Clinical updates	1	2	3	4	5
f) Inservices	1	2	3	4	5
g) E-mail	1	2	3	4	5
h) Newsgroups/Listerves	1	2	3	4	5
i) Newsletters	1	2	3	4	5
j) Online Bulletin Board Systems	1	2	3	4	5
k) Other (please specify) _____ _____	1	2	3	4	5

4. On the following scale, rate how **well** you feel you **identify** with the profession of nursing? (Please circle the appropriate number)

-------1-------2-------3-------4-------5-------6-------7-------8-------9-------10-------

Not at all **Extremely well**

5. Did you feel **supported** by your **nursing colleagues** to take part in this study? (Please check the appropriate box and provide an explanation)
   a) ☐ No
   b) ☐ Yes

Please explain. _____

_____

_____

_____

_____

6. Did you feel **supported** by your **Administrator/Director of Care** to take part in this study? (Please check the appropriate box and provide an explanation)
   a) ☐ No
   b) ☐ Yes

Please explain. _____

_____

_____

_____

_____

7. Did you feel a **sense of community** while interacting with your **Online BBS colleagues**? (Please check the appropriate box and provide an explanation)
   a) ☐ No
   b) ☐ Yes

   Please explain. _____

   _____

   _____

   _____

   _____

8. Would you recommend using the Online BBS to colleagues who are looking for professional practice support? (Please check the appropriate box and provide an explanation)
   a) ☐ No
   b) ☐ Yes

   Please explain. _____

   _____

   _____

   _____

   _____

PART E: Job Satisfaction

1. On the following scale, **circle** the response that best represents your **overall satisfaction** with your job.

   -------1-------2-------3-------4-------5-------6-------7-------8-------9-------10-------

   Not at all satisfied **Extremely satisfied**

2. Using the following scale, rate how **satisfied** you are with the following aspects of your job. (Please circle the appropriate numbers)

	Not at satisfied									Extremely satisfied
a) Amount of pay and fringe benefits	1	2	3	4	5	6	7	8	9	10
b) Autonomy or job-related independence	1	2	3	4	5	6	7	8	9	10
c) Task requirements	1	2	3	4	5	6	7	8	9	10
d) Organizational requirements	1	2	3	4	5	6	7	8	9	10
e) Interaction (formal & informal)	1	2	3	4	5	6	7	8	9	10
f) Job prestige	1	2	3	4	5	6	7	8	9	10
g) Job mobility	1	2	3	4	5	6	7	8	9	10
h) Opportunities to network	1	2	3	4	5	6	7	8	9	10
i) Opportunities to engage in ongoing education	1	2	3	4	5	6	7	8	9	10
j) Being part of a collaborative healthcare team	1	2	3	4	5	6	7	8	9	10

PART E: Internet Access Questions

1. Over the past **three months**, how **often** did you use the Internet? (Please circle the appropriate number)

-------1----------	-------2----------	-------3----------	-------4----------	-------5-------
Never	**Once every Few months**	**At least once a month**	**Once every few weeks**	**A few times a week or more**

2. Over the past **three months**, how **often** did you use the Internet for the following reasons? (Please circle the appropriate numbers)

	Never	Once every few months	At least once a month	Once every few weeks	A few times a week or more
a) Networking with other nurses	1	2	3	4	5
b) Networking with other healthcare professionals	1	2	3	4	5
c) Finding information regarding ongoing education courses/inservices	1	2	3	4	5
d) Finding information regarding conferences	1	2	3	4	5
e) Finding information regarding mental health services	1	2	3	4	5
f) Finding information regarding community support services	1	2	3	4	5
g) To find Online journal articles	1	2	3	4	5
h) Other (please specify) _____ _____	1	2	3	4	5

3. On the following scale, please rate how **comfortable** you are with using the Internet. (Please circle the appropriate number)

-------1-------2-------3-------4-------5-------6-------7-------8-------9-------10-------	
Not at all comfortable	**Extremely comfortable**

4. On the following scale, please rate how **confident** you are with using the Internet. (Please circle the appropriate number)

-------1-------2-------3-------4-------5-------6-------7-------8-------9-------10-------	
Not at all confident	**Extremely confident**

5. Over the past **three months**, how **often** did you log on to the Online BBS? (Please circle the appropriate number)

-------1----------	-------2----------	-------3----------	-------4----------	-------5-------
Never	**Once every Few months**	**At least once a month**	**Once every few weeks**	**A few times a week or more**

6. Over the past **three months**, how **often** did you **post messages** on the Online BBS? (Please circle the appropriate number)

-------1----------2----------3----------4----------5-------

Never	Once every Few months	At least once a month	Once every few weeks	A few times a week or more

7. Over the past **three months**, how **often** did you **respond to messages** on the Online BBS? (Please circle the appropriate number)

-------1----------2----------3----------4----------5-------

Never	Once every Few months	At least once a month	Once every few weeks	A few times a week or more

8. Over the past **three months**, how **often** did you **read messages** without responding to them on the Online BBS? (Please circle the appropriate number)

-------1----------2----------3----------4----------5-------

Never	Once every Few months	At least once a month	Once every few weeks	A few times a week or more

9. Using the following scale, rate how **satisfied** you were with the overall **quality of postings/responses** on the Online BBS? (Please circle the appropriate number)

-------1-------2-------3-------4-------5-------6-------7-------8-------9-------10-------

Not at all satisfied ... **Extremely satisfied**

Please explain. _____

_____

_____

_____

10. Using the following scale, rate the overall **usefulness** of the Online BBS. (Please circle the appropriate number)

-------1-------2-------3-------4-------5-------6-------7-------8-------9-------10-------

Not at all useful ... **Extremely useful**

Please explain. _____

_____

_____

_____

11. If you would like to add any additional comments, please do so in the space provided below.

_____

_____

_____

_____

Thank you for taking the time to complete this questionnaire!

APPENDIX R

CONTROL GROUP POSTTEST QUESTIONNAIRE

NURSES INFORMATION NEEDS AND RESOURCE SURVEY

Attention: Selena Santi
Geropsychiatric Education Program (GPEP)
#228-1195 West Broadway
Vancouver, BC V6H 3X5
Facsimile: (604) 739-9041

Thank you for taking the time to complete this survey. The information you provide will remain confidential and will be used to understand the effectiveness of an Online Bulletin Board System in meeting your information needs. Please read each of the following questions and indicate your response by either placing an 'X' in the appropriate box, circling the appropriate number, or by filling in the blank spaces provided (please print clearly). Unless otherwise specified, **please mark only one response per question.** We look forward to receiving your **completed questionnaire by Friday, June 21, 2002.** Please fax or mail your completed questionnaire to the above address.

PART A: Information Needs & Access

1. Over the past **three months,** how **often** did you need information on the following topics? (Please circle the appropriate numbers)

	Never	Once every few months	At least once a month	Once every few weeks	A few times a week or more
a) Drug therapy and interactions	1	2	3	4	5
b) Addressing complex diagnoses	1	2	3	4	5
c) Knowing when to refer	1	2	3	4	5
d) Physical assessments	1	2	3	4	5
e) Skin care & wound management	1	2	3	4	5
f) Effective communication techniques	1	2	3	4	5
g) Signs, symptoms, & treatment of depression	1	2	3	4	5
h) Signs, symptoms, & treatment of dementia	1	2	3	4	5
i) Signs, symptoms, & treatment of delirium	1	2	3	4	5
j) Dealing with challenging behaviours	1	2	3	4	5
k) Psychological assessments	1	2	3	4	5
l) Providing palliative care	1	2	3	4	5
m) Monitoring wandering behaviours	1	2	3	4	5
n) Infectious diseases	1	2	3	4	5
o) Dealing with families	1	2	3	4	5
p) Coping with grief and loss	1	2	3	4	5
q) Other (please specify) _____ _____	1	2	3	4	5

2. Over the past **three months**, how **well** were your information needs met in the following areas? (Please circle the appropriate numbers)

		Not at all									Extremely well
a)	Drug therapy and interactions	1	2	3	4	5	6	7	8	9	10
b)	Addressing complex diagnoses	1	2	3	4	5	6	7	8	9	10
c)	Knowing when to refer	1	2	3	4	5	6	7	8	9	10
d)	Physical assessments	1	2	3	4	5	6	7	8	9	10
e)	Skin care & wound management	1	2	3	4	5	6	7	8	9	10
f)	Effective communication techniques	1	2	3	4	5	6	7	8	9	10
g)	Signs, symptoms, & treatment of depression	1	2	3	4	5	6	7	8	9	10
h)	Signs, symptoms, & treatment of dementia	1	2	3	4	5	6	7	8	9	10
i)	Signs, symptoms, & treatment of delirium	1	2	3	4	5	6	7	8	9	10
j)	Dealing with challenging behaviours	1	2	3	4	5	6	7	8	9	10
k)	Psychological assessments	1	2	3	4	5	6	7	8	9	10
l)	Providing palliative care	1	2	3	4	5	6	7	8	9	10
m)	Monitoring wandering behaviours	1	2	3	4	5	6	7	8	9	10
n)	Infectious diseases	1	2	3	4	5	6	7	8	9	10
o)	Dealing with families	1	2	3	4	5	6	7	8	9	10
p)	Coping with grief and loss	1	2	3	4	5	6	7	8	9	10
q)	Other (please specify) _____ _____	1	2	3	4	5	6	7	8	9	10

PART B: Information Resources

1. Over the past **three months**, how **often** did you use the resources listed below to learn more about how to meet the specific needs of your clients? (Please circle the appropriate numbers)

		Never	Once every few months	At least once a month	Once every few weeks	A few times a week or more
a)	General Practitioner (GP)	1	2	3	4	5
b)	Medical Coordinator	1	2	3	4	5
c)	Head Nurse	1	2	3	4	5
d)	Other Nurses at work	1	2	3	4	5
e)	Nurses outside of work	1	2	3	4	5
f)	Health Unit Facility Liaisons	1	2	3	4	5
g)	Text books	1	2	3	4	5
h)	Journal articles	1	2	3	4	5
i)	Pharmacists	1	2	3	4	5
j)	Consultation with Clinical Nurse Specialists	1	2	3	4	5
k)	Consultation with Health Educators	1	2	3	4	5
l)	Consultation with Mental Health Team	1	2	3	4	5
m)	Newsgroups/Listserves	1	2	3	4	5
n)	Online Bulletin Boards	1	2	3	4	5
o)	Websites	1	2	3	4	5
p)	Inservices	1	2	3	4	5

q) Clinical Updates ---1----------2----------3----------4----------5---
r) Conferences ---1----------2----------3----------4----------5---
s) Other (please specify) _____
_____ ---1----------2----------3----------4----------5---

2. Over the past **three months**, how **helpful** did you find the information obtained from the resources listed below? (Please circle the appropriate numbers)

	Not at all helpful									Extremely helpful
a) General Practitioner (GP)	1	2	3	4	5	6	7	8	9	10
b) Medical Coordinator	1	2	3	4	5	6	7	8	9	10
c) Head Nurse	1	2	3	4	5	6	7	8	9	10
d) Other Nurses at work	1	2	3	4	5	6	7	8	9	10
e) Nurses outside of work	1	2	3	4	5	6	7	8	9	10
f) Health Unit Facility Liaisons	1	2	3	4	5	6	7	8	9	10
g) Text books	1	2	3	4	5	6	7	8	9	10
h) Journal articles	1	2	3	4	5	6	7	8	9	10
i) Pharmacists	1	2	3	4	5	6	7	8	9	10
j) Consultation with Clinical Nurse Specialists	1	2	3	4	5	6	7	8	9	10
k) Consultation with Health Educators	1	2	3	4	5	6	7	8	9	10
l) Consultation with Mental Health Team	1	2	3	4	5	6	7	8	9	10
m) Newsgroups/Listserves	1	2	3	4	5	6	7	8	9	10
n) Online Bulletin Boards	1	2	3	4	5	6	7	8	9	10
o) Websites	1	2	3	4	5	6	7	8	9	10
p) Inservices	1	2	3	4	5	6	7	8	9	10
q) Clinical Updates	1	2	3	4	5	6	7	8	9	10
r) Conferences	1	2	3	4	5	6	7	8	9	10
s) Other (please specify) _____										
_____	1	2	3	4	5	6	7	8	9	10

PART C: Care Provision Efficacy

1. Over the past **three months**, how **well** do you feel you were able to provide care to your clients? (Please circle the most appropriate number)

-------1-------2-------3-------4-------5-------6-------7-------8-------9-------10-------

Not at all **Extremely well**

PART D: Networking & Support

1. Over the past **three months**, how **often** did you network with nurses who **work outside** of your facility? (Please circle the appropriate number)

-------1----------2----------3----------4----------5-------

Never	Once every few months	At least once a month	Once every few weeks	A few times a week or more

2. Over the past **three months**, how **often** did you collaborate with **nurses outside** of your facility in order to obtain information on the topics listed below? (Please circle the appropriate numbers)

	Never	Once every few months	At least once a month	Once every few weeks	A few times a week or more
a) Drug therapy and interactions	1	2	3	4	5
b) Addressing complex diagnoses	1	2	3	4	5
c) Knowing when to refer	1	2	3	4	5
d) Physical assessments	1	2	3	4	5
e) Skin care & wound management	1	2	3	4	5
f) Effective communication techniques	1	2	3	4	5
g) Signs, symptoms, & treatment of depression	1	2	3	4	5
h) Signs, symptoms, & treatment of dementia	1	2	3	4	5
i) Signs, symptoms, & treatment of delirium	1	2	3	4	5
j) Dealing with challenging behaviours	1	2	3	4	5
k) Psychological assessments	1	2	3	4	5
l) Providing palliative care	1	2	3	4	5
m) Monitoring wandering behaviours	1	2	3	4	5
n) Infectious diseases	1	2	3	4	5
o) Dealing with families	1	2	3	4	5
p) Coping with grief and loss	1	2	3	4	5
q) Other (please specify) _____ _____	1	2	3	4	5

3. Over the past **three months**, how **often** did you use the following methods to **network** with other nurses? (Please circle the appropriate numbers)

	Never	Once every few months	At least once a month	Once every few weeks	A few times a week or more
a) Professional associations	1	2	3	4	5
b) Meetings	1	2	3	4	5
c) Educational sessions	1	2	3	4	5
d) Conferences	1	2	3	4	5
e) Clinical updates	1	2	3	4	5
f) Inservices	1	2	3	4	5
g) E-mail	1	2	3	4	5
h) Newsgroups/Listerves	1	2	3	4	5

i) Newsletters ---1---------2---------3---------4---------5---
j) Online Bulletin Board Systems ---1---------2---------3---------4---------5---
k) Other (please specify) _____
_____ ---1---------2---------3---------4---------5---

4. On the following scale, rate how **well** you feel you **identify** with the profession of nursing? (Please circle the appropriate number)

-------1-------2-------3-------4-------5-------6-------7-------8-------9-------10-------

Not at all **Extremely well**

5. Did you feel **supported** by your **nursing colleagues** to take part in this study? (Please check the appropriate box and provide an explanation)
   c) ☐ No
   d) ☐ Yes

Please explain.

_____
_____
_____
_____
_____

6. Did you feel **supported** by your **Administrator/Director of Care** to take part in this study? (Please check the appropriate box and provide an explanation)
   c) ☐ No
   d) ☐ Yes

Please explain.

_____
_____
_____
_____
_____

PART E: Job Satisfaction

1. On the following scale, **circle** the response that best represents your **overall satisfaction** with your job.

-------1-------2-------3-------4-------5-------6-------7-------8-------9-------10-------

Not at all satisfied **Extremely satisfied**

2. Using the following scale, rate how **satisfied** you are with the following aspects of your job. (Please circle the appropriate numbers)

	Not at satisfied									Extremely satisfied
a) Amount of pay and fringe benefits	1	2	3	4	5	6	7	8	9	10
b) Autonomy or job-related independence	1	2	3	4	5	6	7	8	9	10
c) Task requirements	1	2	3	4	5	6	7	8	9	10
d) Organizational requirements	1	2	3	4	5	6	7	8	9	10
e) Interaction (formal & informal)	1	2	3	4	5	6	7	8	9	10
f) Job prestige	1	2	3	4	5	6	7	8	9	10
g) Job mobility	1	2	3	4	5	6	7	8	9	10
h) Opportunities to network	1	2	3	4	5	6	7	8	9	10
i) Opportunities to engage in ongoing education	1	2	3	4	5	6	7	8	9	10
j) Being part of a collaborative healthcare team	1	2	3	4	5	6	7	8	9	10

PART E: Internet Access Questions

1. Over the past **three months**, how **often** did you use the Internet? (Please circle the appropriate number)

1	2	3	4	5
Never	**Once every Few months**	**At least once a month**	**Once every few weeks**	**A few times a week or more**

2. Over the past **three months**, how **often** did you use the Internet for the following reasons? (Please circle the appropriate numbers)

	Never	Once every few months	At least once a month	Once every few weeks	A few times a week or more
a) Networking with other nurses	1	2	3	4	5
b) Networking with other healthcare professionals	1	2	3	4	5
c) Finding information regarding ongoing education courses/inservices	1	2	3	4	5
d) Finding information regarding conferences	1	2	3	4	5
e) Finding information regarding mental health services	1	2	3	4	5
f) Finding information regarding community support services	1	2	3	4	5
g) To find Online journal articles	1	2	3	4	5
h) Other (please specify) _____ _____	1	2	3	4	5

3. On the following scale, please rate how **comfortable** you are with using the Internet. (Please circle the appropriate number)

-------1-------2-------3-------4-------5-------6-------7-------8-------9-------10-------

Not at all comfortable **Extremely comfortable**

4. On the following scale, please rate how **confident** you are with using the Internet. (Please circle the appropriate number)

-------1-------2-------3-------4-------5-------6-------7-------8-------9-------10-------

Not at all confident **Extremely confident**

5. If you would like to add any additional comments, please do so in the space provided below.

_____

_____

_____

_____

Thank you for taking the time to complete this questionnaire!

APPENDIX S

DEMOGRAPHIC VARIABLES BY CONTROL GROUP DESIGNATION

	Total $N = 17$ (100%)	**Significance of Group Assignment**	**No Access $n = 7$ (100%)**	**Online BBS Access $n = 10$ (100%)**
Gender				
Male	3 (17.6)	Fisher's Exact,	--	3 (30.0)
Female	14 (82.4)	$p = .23$, *ns*	7 (100.0)	7 (70.0)
Age				
Mean	47.41		50.14	45.50
Median	48.00		55.00	44.50
Mode	42.00		48.00	42.00
SD	9.84	$\chi^2(30, N=17)$	12.06	8.06
Range	35 (25 – 60)	$= 19.22$, *ns*	35 (25 – 60)	23 (34 – 57)
Marital Status				
Married/Common law	12 (70.6)		6 (85.7)	6 (60.0)
Separated/Divorced	3 (17.6)	$\chi^2(2, N=17)$	1 (14.3)	2 (20.0)
Never Married	2 (11.8)	$= 2.58$, *ns*	--	2 (20.0)
Language				
English	2 (11.8)	Fisher's Exact,	1 (14.3)	1 (10.0)
Other	15 (88.2)	$p = 1.00$, *ns*	6 (85.7)	9 (90.0)
Level of Education				
Hospital Based	3 (17.6)		--	3 (30.0)
Certificate/Diploma	4 (23.5)		2 (28.6)	2 (20.0)
Undergraduate Degree	8 (47.1)		4 (57.1)	4 (40.0)
Graduate Degree	2 (11.8)	$\chi^2(4, N=17)$	1 (14.3)	1 (10.0)
Other	--	$= 3.63$, *ns*	--	--
Employment Status				
Full-time	10 (58.8)		6 (85.7)	4 (40.0)
Part-time	5 (29.4)	$\chi^2(2, N=17)$	--	5 (50.0)
Casual	2 (11.8)	$= 6.80, p<.05$	1 (14.3)	1 (10.0)
Shifts Worked Most Often				
Mornings	1 (5.9)		--	1 (10.0)
Days	10 (58.8)		3 (42.9)	7 (70.0)
Afternoons	--		--	--
Evenings	6 (35.3)	$\chi^2(4, N=17)$	4 (57.1)	2 (20.0)
Full shift rotation	--	$= 3.18$, *ns*	--	--
Level of Care Provided in Facility				
Intermediate	4 (23.5)		1 (14.3)	3 (30.0)
Extended	9 (52.9)		6 (85.7)	3 (30.0)
Multilevel	2 (11.8)	$\chi^2(3, N=17)$	--	2 (20.0)
Other	2 (11.8)	$= 7.08$, *ns*	--	2 (20.0)
Total years working with elderly				
<1 year	--		--	--
1 – 9 years	7 (41.2)		2 (28.6)	5 (50.0)
10 – 19 years	6 (35.3)	$\chi^2(3, N=17)$	4 (57.1)	2 (20.0)
20 – 29 years	4 (23.5)	$= 2.52$, *ns*	1 (14.3)	3 (30.0)

APPENDIX T

INTERNET VARIABLES BY CONTROL GROUP DESIGNATION

	Total $N = 17$ (100%)	**Significance of Group Assignment**	**No Access $n = 7$ (100%)**	**Online BBS Access $n = 10$ (100%)**
Computer Access	15 (88.2)	Fisher's Exact, $p = .154$, *ns*	5 (71.4)	10 (100.0)
Frequency of Computer Use				
Once every few months	1 (7.1)		--	1 (10.0)
At least once a month	2 (14.3)		1 (25.0)	1 (10.0)
Once every few weeks	2 (14.3)	$\chi^2(3, N=14)$	1 (25.0)	1 (10.0)
A few times a week or more	9 (64.3)	$= 1.67$, *ns*	2 (50.0)	7 (70.0)
Internet Access	14 (93.3)	Fisher's Exact, $p = .333$, *ns*	4 (80.0)	10 (100.0)
Home	14 (93.3)	Fisher's Exact, $p = .333$, *ns*	4 (80.0)	10 (100.0)
Work	8 (53.3)	Fisher's Exact, $p = .608$, *ns*	2 (40.0)	6 (60.0)
Internet Use	13 (86.7)	Fisher's Exact, $p = .095$	3 (60.0)	10 (100.0)
Years of Experience				
< 6 months	1 (7.1)		1 (25.0)	--
6 – 12 months	2 (14.3)		1 (25.0)	1 (10.0)
1 – 3 years	5 (35.7)		2 (50.0)	3 (30.0)
4 – 6 years	4 (28.6)	$\chi^2(4, N=14)$	--	4 (40.0)
> 6 years	2 (14.3)	$= 7.25$, *ns*	--	2 (20.0)
Frequency of Internet Use				
Once every few months	2 (14.3)		1 (25.0)	1 (10.0)
At least once a month	1 (7.1)		--	1 (10.0)
Once every few weeks	1 (7.1)	$\chi^2(3, N=14)$	--	1 (10.0)
A few times a week or more	10 (71.4)	$= 1.76$, *ns*	3 (75.0)	7 (70.0)
Comfort using the Internet				
Mean	6.43		4.75	7.10
Median	7.00		4.50	7.50
Mode	7.00		3.00	7.00
SD	2.62	$\chi^2(9, N=14)$	1.71	2.69
Range	8 (2 – 10)	$= 7.38$, *ns*	4 (3 – 7)	8 (2 – 10)
Confidence using the Internet				
Mean	5.86		5.86	6.50
Median	5.00		5.00	6.50
Mode	5.00		5.00	5.00
SD	2.45	$\chi^2(9, N=147)$	2.45	2.59
Range	8 (2 – 10)	$= 8.43$, *ns*	2 (3 – 5)	8 (2 – 10)

APPENDIX U

RESULTS FOR ACTIVE ONLINE BBS USERS

Table U-1: Overall MANOVAs for Online BBS Users

Overall Scales	Group	Occasion T1 *M*	T1 *SD*	T2 *M*	T2 *SD*	F (1, 32) Time	Group	T x G
Information Needs	CG	47.65	14.594	54.71	17.280	.149	1.304	3.482
	IG	48.82	13.630	44.19	14.339			
	Total	48.24	13.918	49.45	16.522			
Networking & Support	CG	29.86	12.736	32.18	16.471	1.969	.258	.184
	IG	31.00	12.480	35.35	14.650			
	Total	30.43	12.429	33.76	15.433			
Job Satisfaction	CG	69.25	24.484	66.87	26.427	.000	1.533	.631
	IC	75.82	17.357	78.09	21.183			
	Total	72.54	21.163	72.48	24.262			
Care Provision Efficacy	CG	7.88	1.111	7.44	1.619	.039	.084	3.389
	IC	7.59	1.176	7.94	1.029			
	Total	7.73	1.136	7.69	1.360			

Note: CG, control group (n = 17); IG, intervention group (random; n = 17).
*p<.05; **p<.01; ***p<.001